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BUILDING 21 LEAD INVESTIGATION REPORT NASJRB WILLOW GROVE PA

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TETRA TECH

Building 21
Lead Investigation Report

Naval Air Station
Joint Reserve Base (NAS JRB)
Willow Grove, Pennsylvania

Naval Facilities Engineering Command
Mid-Atlantic

Contract No. N62470-08-D-1001
Contract Task Order WE05

April 2012

TETRA TECH

PHIL-24624

BUILDING 21
LEAD INVESTIGATION REPORT

NAVAL AIR STATION JOINT RESERVE BASE (NAS JRB)
WILLOW GROVE, PENNSYLVANIA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Naval Facilities Engineering Command Mid-Atlantic
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Norfolk, Virginia 23511-3095

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Contract No. N62470-08-D-1001
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ACRONYMS

bgs	Below ground surface
BRAC	Base Realignment and Closure
CLEAN	Comprehensive Long-Term Environmental Action Navy Contract
CRQL	Contract Required Quantitation Limit
DoD	Department of Defense
EIHA	Eagle Industrial Hygiene Associates, Inc.
EPA	United States Environmental Protection Agency
f/cc	Fibers per cubic centimeter
HEPA	High-efficiency particulate air
LBP	Lead-based paint
MS	Matrix spike
MSC	Medium-specific concentration
MSD	Matrix spike duplicate
NAS JRB	Naval Air Station Joint Reserve Base
NPL	National Priorities List
PMB	Plastic Media Blast
QA/QC	Quality assurance/quality control
RI	Remedial Investigation
RPD	Relative percent difference
RSLs	Regional Screening Levels
SDG	Sample Delivery Group
SI	Site Investigation
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
U.S.C.S.	Unified Soil Classification System
yd^3	Cubic yards

1.0 INTRODUCTION

Tetra Tech has prepared this Lead Investigation Report for Building 21 at the former Naval Air Station Joint Reserve Base (NAS JRB) Willow Grove, Pennsylvania in response to Contract Task Order No. WE05 under Contract N62470-08-D-1001, Comprehensive Long-Term Environmental Action-Navy (CLEAN). This report presents the results of a lead investigation conducted at Building 21 at the former NAS JRB Willow Grove.

1.1 INVESTIGATION OBJECTIVES

The objective for the lead investigation at Building 21 was to delineate lead contamination in the surface and shallow subsurface soil around Building 21 and to provide results to design and plan any necessary remediation and closeout under applicable standards. Samples were collected at locations selected to provide representative coverage of the area surrounding Building 21 that is not covered by impermeable materials (asphalt or concrete). At each location, samples were collected from three depths to provide vertical contaminant delineation.

Supporting documentation, attached as appendices to this investigation report, include copies of sample log sheets and laboratory analytical data. Figures are provided that show the locations of all soil samples and the analytical results.

1.2 REPORT ORGANIZATION

Section 1.0 presents a brief overview of the project objective and report organization. Section 2.0 summarizes the background information available for the site. Section 3.0 presents a description of the field investigation, as scoped in the Work Plan for Building 21 Lead Investigations, NAS JRB Willow Grove, Pennsylvania (Tetra Tech, October 2011). Section 4.0 discusses the findings of the investigation. Section 5.0 presents conclusions and recommendations regarding the need for corrective action.

2.0 BACKGROUND INFORMATION

2.1 LOCATION

NAS JRB Willow Grove, Pennsylvania is located in Horsham Township, Montgomery County in southeastern Pennsylvania, approximately 20 miles north of the city of Philadelphia. NAS JRB Willow Grove occupies approximately 1,000 acres of the 1,200 acres maintained by the Department of Defense (DoD) at the air station and shares facilities/services with the Air Force Reserve. The primary mission of NAS JRB Willow Grove was to provide support for operations involving aviation training activities and to train Navy reservists. NAS JRB was placed on the National Priorities List (NPL) in September 1995. The Base was selected for closure by the Base Realignment and Closure (BRAC) Law in November 2005. The NAS portion of the facility closed in September 2011 and is slated for development. The Air Force will operate the remaining facilities as the Horsham Air Reserve Station.

Figure 1 shows the location of NAS JRB Willow Grove and ARS. The Air Station is comprised of flat to slightly rolling terrain and is generally bounded by State Route 611 to the east, State Route 463 to the southwest, and Keith Valley Road to the north. Building 21 is located in the southeastern section of the property (Figure 1). The building measures approximately 65 feet by 40 feet. The building is bordered by grass-covered areas to the north, east, and southeast, and by asphalt pavement to the west (Figure 2). A concrete driveway is adjacent to the southwestern side of the building. A storm sewer grate is located at the southwestern corner of the concrete driveway. The ground surface near the building slopes to the west-southwest. An electrical transformer is located approximately 60 feet southwest of Building 21 and is partially enclosed by a security fence, with surrounding grass-covered areas.

2.2 SITE HISTORY

Building 21 was constructed in 1942 as a paint and dope facility. In 1995, the building was selected as the site for a new Plastic Media Blast (PMB) booth. To prepare for the new booth installation, the inside of the building underwent remediation for lead contamination caused by leaks in the exhaust system of the paint booth, which was being used as a sandblasting booth to remove leaded paint from ground support equipment. Lead contamination found in soil near Building 21 may have resulted from historical sandblasting operations, lead-based paint peeling off the structure itself or some other historical source. There is no record of remediation of the contaminated soil. The building is no longer in use.

2.3 PHYSICAL SETTING

NAS JRB Willow Grove is located within the Triassic Basin of southeastern Pennsylvania. The bedrock underlying the NAS JRB consists of the middle arkose member of the late Triassic Stockton Formation. The Stockton Formation locally is about 5,000 feet thick and is unconformably underlain by Ordovician to PreCambrian basement rocks. Previous environmental investigations indicate that the top of bedrock at the Air Station is generally encountered between 5 feet and 25 feet below ground surface (bgs).

Based principally on dominant grain size and lithology, the Stockton Formation is divided into lower, middle, and upper members. The middle member of the Stockton Formation is approximately 4,200 feet thick and consists of fine- to medium-grained arkosic sandstone interbedded with shale. Beds of shale and siltstone are common in the upper portion of the member, and coarser-grained units are more common in the lower portion of the member. The rocks of the middle member are well sorted and weakly cemented, which creates a relatively high porosity compared to the lower and upper members of the formation. The middle member of the Stockton Formation typically weathers to a depth of 15 to 35 feet.

The Soil Survey of Montgomery County (United States Department of Agriculture, 1967) indicates that the soils in the area of Building 21 are mapped as Made land. Made land consists of areas where earth moving during development has altered the original soil profile. These soils vary widely in depth and drainage potential. Soil borings collected from the Base during the Site Investigation (SI) and Remedial Investigation (RI) were comprised of fine grained soils consisting of clayey silt to sandy silt. The depth to bedrock generally ranges from 5 feet to 15 feet bgs.

Soil borings completed in 2010 at the former Building 20, approximately 250 feet southwest of Building 21, encountered fill consisting predominantly of clayey to sandy silt. Bedrock was encountered at a depth of approximately 15 feet bgs. Perched groundwater was encountered at depths ranging from 6 feet to 12 feet bgs.

2.4 PREVIOUS INVESTIGATIONS

The Navy conducted investigations at Building 21 prior to the installation of the PMB booth. On February 27, 1995 two wipe samples were collected from the floor at the abrasive blasting booth of Building 21. Lead was detected at 74,320 µg/ft^2 and 104,048 µg/ft^2, which exceeded the EPA Dust Standard for floors (40 µg/ft^2). Wipe sampling results for the Building 21 are presented in Appendix A.

One sand sample was collected from Building 21 on June 21, 1995. Lead was detected at 2,102 mg/kg. On July 25, 1995, one grit sample was collected from the roof of Building 21 and lead was detected at 54 mg/kg. In August 1995, three grit samples were collected from Building 21 for total lead analysis and

Toxicity Characteristic Leaching Procedure (TCLP) metal analysis. Lead was detected at of 114.98 mg/kg in the grit sample from roof. Lead was detected in two grit samples outside Building 21 at concentrations of 594 mg/kg and 597 mg/kg. TCLP analysis for the three grit samples showed no leachable metals. Sampling results are included in Appendix A.

On August 4, 1995, the Navy collected five surface soil samples near Building 21 for lead analysis. The sample results showed lead concentrations ranging from 186 mg/kg to 2,210 mg/kg. Four of five soil samples exceeded both the Environmental Protection Agency's (EPA) residential direct contact lead screening value of 400 mg/kg and the non-residential direct contact lead screening value of 800 mg/kg. The sample locations and analytical results are listed in Table 1. Soil sampling results are included in Appendix A.

2.5 PREVIOUS REMEDIAL ACTIONS

Remedial actions were conducted at Building 21 between September 11, 1995 and November 15, 1995. Eagle Industrial Hygiene Associates, Inc. (EIHA) performed the removal, decontamination, and proper disposal of lead dust and contaminated soil/ballast and equipment at Building 21. In addition, approximately 160 square feet of asbestos-containing paneling was removed from two locations within Building 21.

Initially, ten wipe samples from the first floor, ten wipe samples from the second floor, and five wipe samples from the attached rear storage building were collected and analyzed for lead content prior to cleanup activities. Sample results indicated lead exceeded the EPA Lead Dust Standards for floors (40 µg/ft^2) in all floor-wipe samples, ranging from 655.2 µg/ft^2 to 13,101.12 µg/ft^2.

All interior surfaces of Building 21 were vacuumed with a high-efficiency particulate air (HEPA) filtered vacuum system, with special attention paid to the horizontal surfaces. After vacuuming, all interior surfaces were wet-wiped with trisodium phosphate and water. All stone ballast was removed from the roof using the HEPA vacuum. The building's exterior surfaces and ground and vegetation surrounding the building were also vacuumed.

After all cleaning procedures were completed, post-test clearance surface wipe and air sampling was performed within the interior of Building 21, and post-test surface wipe and soil sampling was performed outside. Wipe samples for lead collected from the exterior of the building exhibited results ranging from non-detected to 1,300 µg/ft^2. Soil samples for lead collected from the exterior of the building showed results ranging from 50 mg/kg to 3,200 mg/kg. Wipe samples for lead collected in the interior of the building showed results ranging from 144 µg/ft^2 to 35,100 µg/ft^2. These results did not meet the EPA clearance standard for floors of 40 µg/ft^2. Two air samples for lead collected in the interior of the building

exhibited results below detection limits for the volume of air sampled, allowing non-protected personnel free access (EIHA, 1995).

A test-case cleaning procedure was performed on a one-square-foot deck surface located on the first floor of Building 21. This surface was hand-scrubbed with a stiff bristle brush and a strong solution of trisodium phosphate in water. This surface was HEPA-vacuumed dry and the cleaning process repeated three more times. The surface was then wipe sampled for lead content. After the first wipe sample was collected, a four-inch-square surface was measured within the center of the previously cleaned square foot of deck surface, and recleaned in the same fashion five more times. This surface was then wipe sampled for lead content. These wipe samples exhibited results of 610 $\mu g/ft^2$ and 820 $\mu g/ft^2$, respectively (EIHA, 1995).

As a result of not being able to achieve the specified interior wipe sample clearance criteria after such labor-intensive cleaning procedures, the interior surface clearance requirement for lead was withdrawn from the written specification.

Asbestos-containing panels were removed at the end of the clean-up project by nondestructively disassembling them from their frames, wrapping the panels in 6-milpolyethylene sheeting, and properly labeling the wrapped panels prior to transport and proper disposal. A post-test air sample for asbestos collected at the end of this removal project showed results of 0.005 fibers per cubic centimeter (f/cc), passing EPA's recommended clearance for airborne asbestos fibers of 0.01 f/cc or less (EIHA, 1995).

All waste materials generated by the removal/decontamination procedures were stored, transported, and disposed of in accordance with all Federal, State, and local regulations. The Report of Site Remediation for Building 21 Lead Removal/Decontamination (EIHA, 1995) is included in Appendix B.

2.6 CONCEPTUAL SITE MODEL

Metals in soils are typically tightly adsorbed to the soil organic matter or mineral fractions but may be converted into soluble forms, which are more susceptible to leaching and transport to groundwater. Adsorbed metals may migrate from a contaminated source via wind or surface water erosion of surface soils. Metals are generally not degraded by microbial action but can change oxidation state (and toxicity) depending on conditions in their environment.

The site slopes gently to the west-southwest. Most of the land surface southwest of the building is covered by asphalt and concrete, except for the vegetated area immediately surrounding the electrical transformer.

Lead contamination in soil near Building 21 may have resulted from historical sandblasting operations, lead-based paint (LBP) peeling off the structure itself, or some other historical source. Past construction activities at the site are not well documented.

No activities have been reported at the site that would imply contamination of groundwater by leaching mechanisms is likely.

The potential human receptors under both current and hypothetical future land uses for site include current/future child recreational person, current/future adult recreational person, current/future lifetime recreational person, future residential child, future residential adult, future lifetime resident, future construction worker, and current/future industrial worker. Potential exposure routes include ingestion, dermal contact, and inhalation of surface soil.

2.7 APPLICABLE REGULATIONS

2.7.1 PADEP Cleanup Levels

On May 19, 1995 the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2) was signed into law. The revised statewide health standards were published January 8, 2011 in the PA Bulletin. These standards became effective on that date. The PADEP medium-specific concentration (MSC) for lead in soil assuming a residential land use scenario is 500 mg/kg.

2.7.2 Federal Regulations

Under residential lead hazard standards, Toxic Substances Control Act (TSCA) Section 403 (March 2002), lead is considered a hazard when lead exceeds 400 mg/kg in bare soil on residential real property or on the property of a child-occupied facility.

EPA has requested a project screening level of 400 mg/kg for residential direct contact exposures to soil based on EPA Regional Screening Levels (November 2011).

3.0 INVESTIGATION ACTIVITIES

3.1 FIELD INVESTIGATION

On October 18 and 19, 2011, Tetra Tech conducted the field investigation in accordance with procedures outlined in the October 2011 Lead Investigation Work Plan. Tetra Tech personnel performed all sample collection, sample handling, and sample management throughout the investigation. Soil samples were collected from 15 sample locations near Building 21 (Figure 2). Eleven sample locations were located at the grass-covered open areas surrounding Building 21. Three sample locations were located at the grass-covered area of the transformer, and one sample (21SS12) was collected from the grass-covered area northwest of Building 22.

At all but two locations, 21SS11 and 21SS01, samples were collected from three depths: 0 to 0.5 foot below ground surface (bgs), 0.5 to 1 foot bgs, and 1.5 to 2 feet bgs. At location 21SS11, adjacent to the storm sewer grating, only one depth, 0 to 0.5 foot bgs, was sampled, in accordance with the work plan. At sample location 21SS01, no sample was collected from 1.5 to 2 feet bgs due to boring refusal at 1.5 feet bgs. A total of 42 soil samples were collected during the investigation. The soil samples were analyzed for lead by Method SW846 6010B.

Each sample location was first cleared of surface debris. Soil samples from a depth of 0 to 0.5 foot bgs were collected using a properly decontaminated stainless steel trowel and soil samples from depths below 0.5 foot bgs were collected using a properly decontaminated stainless steel hand auger. The soil was placed into a clean stainless steel bowl, homogenized, transferred into the laboratory-supplied sample jars, and placed in iced coolers for temporary storage. The samples were packaged in iced coolers and shipped to the laboratory for analysis via overnight courier. The boreholes were backfilled with excess soil cuttings.

All sample locations were field-located by measuring from fixed points (e.g., driveways, existing buildings) with a tape measure. All sampling data were recorded on sample log sheets and in the site logbook by the Tetra Tech field geologist. The logs provide descriptions of the samples, sample depths, and other pertinent observations. The soil was described using the Unified Soil Classification System (U.S.C.S.). The soil sample log sheets are included in Appendix C. Table 2 summarizes the samples collected.

3.2 QUALITY CONTROL SAMPLE COLLECTION

Field quality assurance/quality control samples were collected to ensure that procedures followed were adequate to protect sample integrity. For the soil samples, these included:

- Rinsate blanks - laboratory-grade water run across decontaminated sampling devices to evaluate decontamination procedures.

- Duplicates - split samples shipped "blind" to the laboratory to assess laboratory precision.

Quality assurance/quality control (QA/QC) samples collected during the October 2011 lead investigation included four duplicate samples, three matrix spike (MS), three matrix spike duplicate (MSD) and two rinsate blanks.

4.0 RESULTS OF INVESTIGATION

4.1 FIELD OBSERVATIONS

The soil around Building 21 consisted predominantly of silty sand, sandy silt and clayey silt, some with varying amounts of fine gravel. No soil staining or odors were observed at any of the sample locations. Table 2 summarizes the soil samples collected. No perched groundwater was encountered during soil boring advancement.

4.2 ANALYTICAL RESULTS

The analytical results were compared to EPA Regional Screening Levels (RSLs) for residential soil. Lead was identified in soil around Building 21 at concentrations above the screening level of 400 mg/kg for residential direct contact exposures. Table 3 summarizes the positive detections from the analytical results and compares them to the EPA RSL. Figure 3 shows the locations of the samples and detected lead concentrations. The complete analytical data report is included in Appendix C.

Lead was detected at concentrations above the EPA RSL of 400 mg/kg in soil from seven sampling locations (21SS01, 21SS08, 21SS09, 21SS10, 21SS11, 21SS13, and 21SS14). The lead RSL was exceeded at all seven sample locations at 0 to 0.5 foot bgs, sample locations 21SS01, 21SS09, and 21SS10 at 0.5 to 1 foot bgs, and sample location 21SS10 at 1.5 to 2 feet bgs. The lead concentrations ranged from 4.95 J mg/kg (in sample 21SS05-1.502) to 1,240 J mg/kg (in sample 21SS10-0.501). The mean and 95% Upper Confidence Limit (UCL) (EPA Pro-UCL) were calculated at 261 mg/kg and 352 mg/kg, respectively. Results of the statistical evaluation are presented in Appendix E.

As shown on Figure 3, the areas with lead exceeding the EPA RSL are located primarily along the grassy area between the southern side of Building 21 and the asphalt and a small grassy area on the eastern side of the building. Elevated levels were also observed along the eastern side of the transformer area.

4.3 DATA USABILITY EVALUATION

The data collected during the lead investigation were determined to be of sufficient quality to be used to evaluate lead contamination in surface soil around Building 21. EPA SW-846 6010B methods were used to analyze for lead. Data validation was performed on all data in accordance with the final Work Plan for Building 21 Lead Investigation (Tetra Tech, October 2011) following Tetra Tech SOPs and EPA Region 3 Modifications to the National Functional Guidelines for Inorganic Data Validation (April 1993) guidelines. Data validation summary narrative reports are included in Appendix D.

Lead was not detected in the field QC blanks. The field duplicate relative percent difference (RPD) exceeded the QC criterion of 50% for field duplicate pair 21SS04-000.5 and 21DUP01. The positive results for these samples were qualified as estimated (J). Lead was detected in the laboratory blanks. The laboratory duplicate RPD for Sample Delivery Group (SDG) C4288 exceeded the QC criterion. The serial dilution %Ds exceeded the QC criterion for all SDGs. The positive results for all samples in all SDGs were qualified as estimated (J).

Some usable results were flagged with the qualifiers J, U, UL because the data were outside quality control criteria. Results were flagged estimated (J) by the laboratory due to exceedance of technical quality control or because result is less than the Contract Required Quantitation Limit (CRQL).

Data validation qualifications and discussion can be found in Appendix D.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The results of the lead investigation indicate that the vertical and horizontal extent of lead contamination in surface soil at Building 21 has been delineated. The lead EPA RSL of 400 mg/kg was exceeded at soil sample locations 21SS01, 21SS08, 21SS09, 21SS10, 21SS11, 21SS13, and 21SS14 at 0 to 0.5 foot bgs, sample locations 21SS01, 21SS09, and 21SS10 at 0.5 to 1 foot bgs, and sample location 21SS10 at 1.5 to 2 feet bgs. The lead concentrations ranged from 4.95 mg/kg (in sample 21SS05-1.502) to 1,240 mg/kg (in sample 21SS10-0.501).

The 1995 Report of Site Remediation of Building 21 indicated that the interior surface clearance standard for lead could not be achieved after extensive cleaning operations. Lead residue was present in Building 21 at levels that exceeded the EPA dust standard on floors. There was evidence of more asbestos-containing materials within Building 21, including deck surfacing material and paint.

5.2 RECOMMENDATIONS

Based on the results of the lead investigation, further actions are required. These subsequent actions may include soil removal action to address the limited known areas of surface and shallow subsurface soil lead contamination around Building 21. The removal action of lead-contaminated soils would reduce the potential human health and environmental risk associated with the lead-contaminated soils around Building 21.

It is recommended that soil be removed in the areas with sample points above the EPA RSL of 400 mg/kg for lead. Figure 4 illustrates the proposed soil removal areas. Soil should be excavated to a depth of 1 foot bgs at the grass-covered areas associated with sample locations 21SS01, 21SS08, 21SS11, 21SS13, and 21SS14. Soil should be excavated to a depth of 1.5 feet bgs at the grass-covered area associated with sample location 21SS09 and to a depth of 2.5 feet bgs at the grass-covered area associated with sample location 21SS10. The total amount of soil to be removed is estimated at approximately 78 cubic yards (yd^3).

As excavation activities are completed, confirmatory soil samples should be collected from the bottom and sidewalls of the excavation areas. Additional excavation should be conducted where confirmatory soil samples indicate that contamination remains.

At the time of property transfer, the Navy will provide future owners notification of the presence of lead and potential for asbestos-containing materials in the interior of the building.

REFERENCES

EIHA (Eagle Industrial Hygiene Associates, Inc.), 1995. Report of Site Remediation Building 21 Lead Removal/ Decontamination, NAS JRB Willow Grove, Pennsylvania. December.

EPA (United States Environmental Protection Agency), 2011. Regions 3, 6, and 9 Regional Screening Levels for Chemical Contaminants at Superfund Sites. RSL Table Update. June.

Tetra Tech, 2011. Work Plan for Building 21 Lead Investigation. October.

United States Department of Agriculture, 1967. Soil Survey of Montgomery County.

TABLES

TABLE 1

1995 SOIL SAMPLE RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

Sample Designation	Sample Location	Lead Concentration (mg/kg)
01	SW side of building	1,910
02	Near storm drain	975
03	Near electrical shop	1,670
04	Across from front doorway	186
05	At doorway on north side	2,210

.

TABLE 2

SOIL SAMPLE SUMMARY
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA
PAGE 1 OF 2

Soil Sample Location	Analytical Sample	Soil Sample Depth Interval (ft bgs)	Sample Description
SS01	21SS01-000.5	0 – 0.5’	Silty sand
	21SS01-0.501	0.5 – 1’	Silty sand and gravel
SS02	21SS02-000.5	0 – 0.5’	Silty sand and gravel
	21SS02-0.501	0.5 – 1’	Silty sand
	21SS02-1.502	1.5’ – 2’	Silty sand, some fine gravel
SS03	21SS03-000.5	0 – 0.5’	Silty sand, some fine gravel
	21SS03-0.501	0.5 – 1’	Silty sand, some fine gravel
	21SS03-1.502	1.5’ – 2’	Silty sand, some fine gravel
SS04	21SS04-000.5	0 – 0.5’	Silty sand, some fine gravel
	21SS04-0.501	0.5 – 1’	Silty sand
	21SS04-1.502	1.5’ – 2’	Silty sand
SS05	21SS05-000.5	0 – 0.5’	Clayey silt, some sand
	21SS05-0.501	0.5 – 1’	Silty sand, some fine gravel
	21SS05-1.502	1.5’ – 2’	Silty sand
SS06	21SS06-000.5	0 – 0.5’	Sandy silt, trace of clay
	21SS06-0.501	0.5 – 1’	Silty sand, trace of clay
	21SS06-1.502	1.5’ – 2’	Silty sand
SS07	21SS07-000.5	0 – 0.5’	Silty sand
	21SS07-0.501	0.5 – 1’	Sandy silt
	21SS07-1.502	1.5’ – 2’	Sandy silt
SS08	21SS08-000.5	0 – 0.5’	Silty sand
	21SS08-0.501	0.5 – 1’	Clayey silt
	21SS08-1.502	1.5’ – 2’	Silty sand, some fine gravel
SS09	21SS09-000.5	0 – 0.5’	Sandy silt, trace of clay
	21SS09-0.501	0.5 – 1’	Silty sand, some fine gravel
	21SS09-1.502	1.5’ – 2’	Sandy silt, trace of clay
SS10	21SS10-000.5	0 – 0.5’	Silty sand, trace of clay
	21SS10-0.501	0.5 – 1’	Silty sand, some fine gravel
	21SS10-1.502	1.5’ – 2’	Silty sand, trace to some clay
SS11	21SS11-000.5	0 – 0.5’	Silty sand

TABLE 2

SOIL SAMPLE SUMMARY
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA
PAGE 2 OF 2

Soil Sample Location	Analytical Sample	Soil Sample Depth Interval (ft bgs)	Sample Description
SS12	21SS12-000.5	0 – 0.5’	Clayey silt
	21SS12-0.501	0.5 – 1’	Clayey silt, some sand
	21SS12-1.502	1.5’ – 2’	Clayey silt, some sand
SS13	21SS13-000.5	0 – 0.5’	Silty sand/silty sand
	21SS13-0.501	0.5 – 1’	Silty sand, some fine gravel
	21SS13-1.502	1.5’ – 2’	Sandy silt to clayey silt, some gravel
SS14	21SS14-000.5	0 – 0.5’	Silty sand, some fine gravel
	21SS14-0.501	0.5 – 1’	Silty sand, some fine gravel
	21SS14-1.502	1.5’ – 2’	Clayey silt
SS15	21SS15-000.5	0 – 0.5’	Clayey silt
	21SS15-0.501	0.5 – 1’	Clayey silt
	21SS15-1.502	1.5’ – 2’	Clayey silt

TABLE 3

DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

Sample ID:			21SS01-000.5		21SS01-000.5-D		21SS01-0.501		21SS02-000.5		21SS02-0.501		21SS02-1.502		21SS03-000.5		21SS03-0.501	
Sample Date:	RSL	PADEP MSC	10/18/11		10/18/11		10/18/11		10/18/11		10/18/11		10/18/11		10/18/11		10/18/11	
Duplicate of:	Residential	Residential			21SS01-000.5													
	mg/kg	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Lead	400	500	515	J	383	J	469	J	155	J	38.9	J	83.2	J	113	J	58.1	J

Sample ID:			21SS03-1.502		21SS04-000.5		21SS04-000.5-D		21SS04-0.501		21SS04-1.502		21SS05-000.5		21SS05-0.501		21SS05-1.502	
Sample Date:	RSL	PADEP MSC	10/18/11		10/18/11		10/18/11		10/18/11		10/18/11		10/18/11		10/18/11		10/18/11	
Duplicate of:	Residential	Residential					21SS04-000.5											
	mg/kg	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Lead	400	500	36.9	J	239	J	494	J	83.1	J	14.9	J	75.3	J	19.4	J	4.95	J

Sample ID:			21SS06-000.5		21SS06-0.501		21SS06-1.502		21SS07-000.5		21SS07-000.5-D		21SS07-0.501		21SS07-1.502		21SS08-000.5	
Sample Date:	RSL	PADEP MSC	10/18/11		10/18/11		10/18/11		10/18/11		10/18/11		10/18/11		10/18/11		10/19/11	
Duplicate of:	Residential	Residential									21SS07-000.5							
	mg/kg	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Lead	400	500	88	J	44	J	19.3	J	119	J	101	J	122	J	63.7	J	908	J

Sample ID:			21SS08-0.501		21SS08-1.502		21SS09-000.5		21SS09-0.501		21SS09-1.502		21SS10-000.5		21SS10-0.501		21SS10-1.502	
Sample Date:	RSL	PADEP MSC	10/19/11		10/19/11		10/19/11		10/19/11		10/19/11		10/19/11		10/19/11		10/19/11	
Duplicate of:	Residential	Residential																
	mg/kg	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Lead	400	500	71	J	29.3	J	710	J	596	J	147	J	716	J	1240	J	1130	J

Sample ID:			21SS11-000.5		21SS12-000.5		21SS12-0.501		21SS12-1.502		21SS13-000.5		21SS13-0.501		21SS13-1.502		21SS14-000.5	
Sample Date:	RSL	PADEP MSC	10/18/11		10/19/11		10/19/11		10/19/11		10/18/11		10/18/11		10/18/11		10/19/11	
Duplicate of:	Residential	Residential																
	mg/kg	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
Lead	400	500	548	J	82.4	J	134	J	44.4	J	467	J	393	J	15.9	J	535	J

Sample ID:			21SS14-0.501		21SS14-1.502		21SS15-000.5		21SS15-000.5-D		21SS15-0.501		21SS15-1.502					
Sample Date:	RSL	PADEP MSC	10/19/11		10/19/11		10/19/11		10/19/11		10/19/11		10/19/11					
Duplicate of:	Residential	Residential							21SS15-000.5									
	mg/kg	mg/kg	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg					
Lead	400	500	277	J	10.3	J	209	J	176	J	179	J	45.4	J				

TABLE 3

DATA SUMMARY OF POSITIVE ANALYTICAL RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

Data Qualifiers:

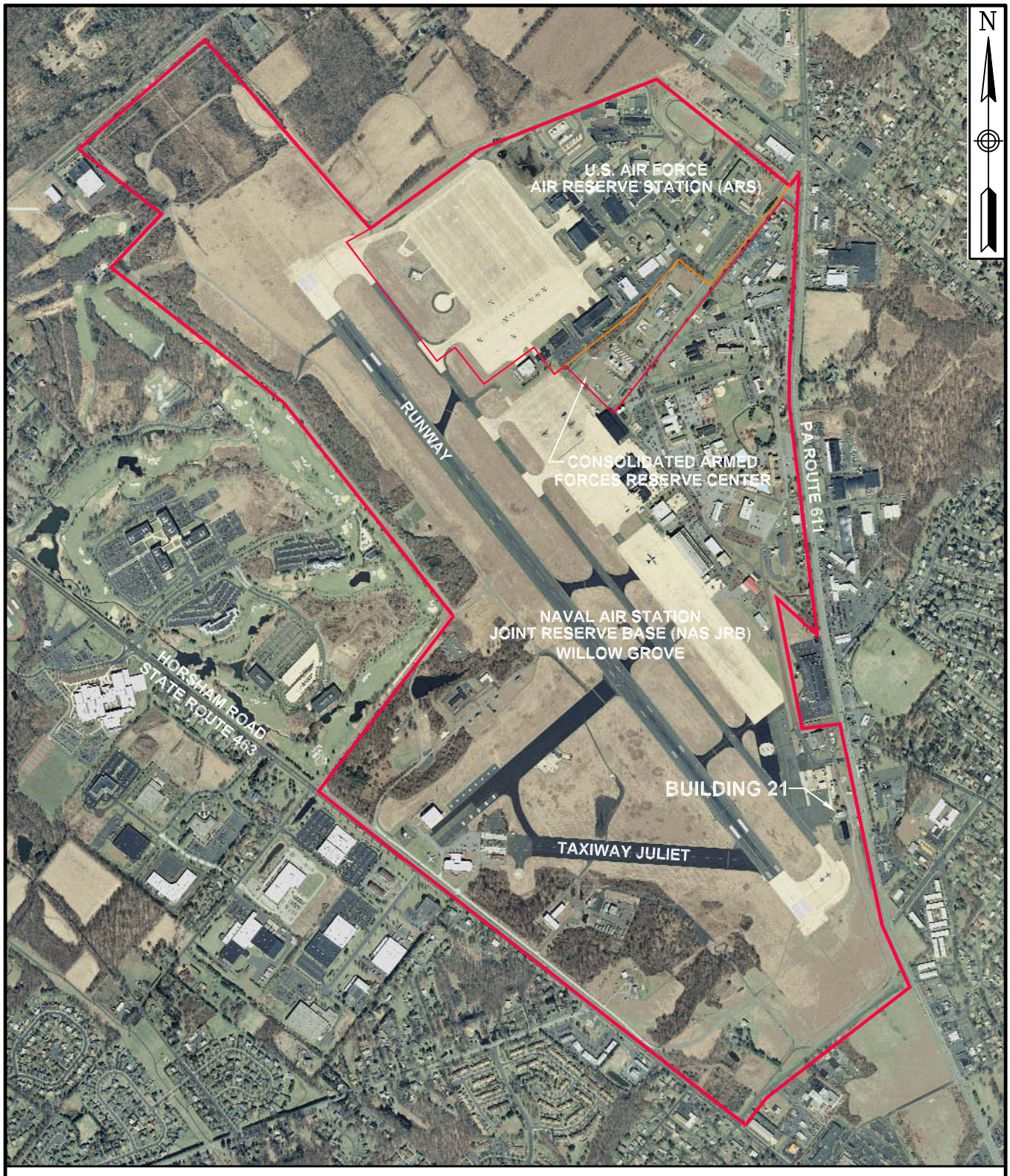
B -- Positive result is considered to be an artifact of blank contamination, and should not be considered present.
J -- Value is considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Quantitation Limit (CRQL).
L -- Positive result is considered biased low due to exceedance of technical quality control criteria.
U -- Value is a non-detected result as reported by the laboratory.
UL -- Non-detected result is considered biased low due to exceedance of technical quality control criteria.

Shaded values exceed the EPA Region Screening Level for soil.

1. EPA Region Screening Levels (RSLs) for Soil (November 2011).
http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm
2. PADEP Residential Soil (0-15 feet) Medium Specific Concentrations (MSCs) for Direct Contact (January 2011).
http://files.dep.state.pa.us/LocalGovt/OCRLGS/LocalGovtPortalFiles/SWH%20Tables%202011/Table%204a%202011.pdf

FIGURES

112G02041\1721\112G02014BM01.DWG 01/10/12 MKB



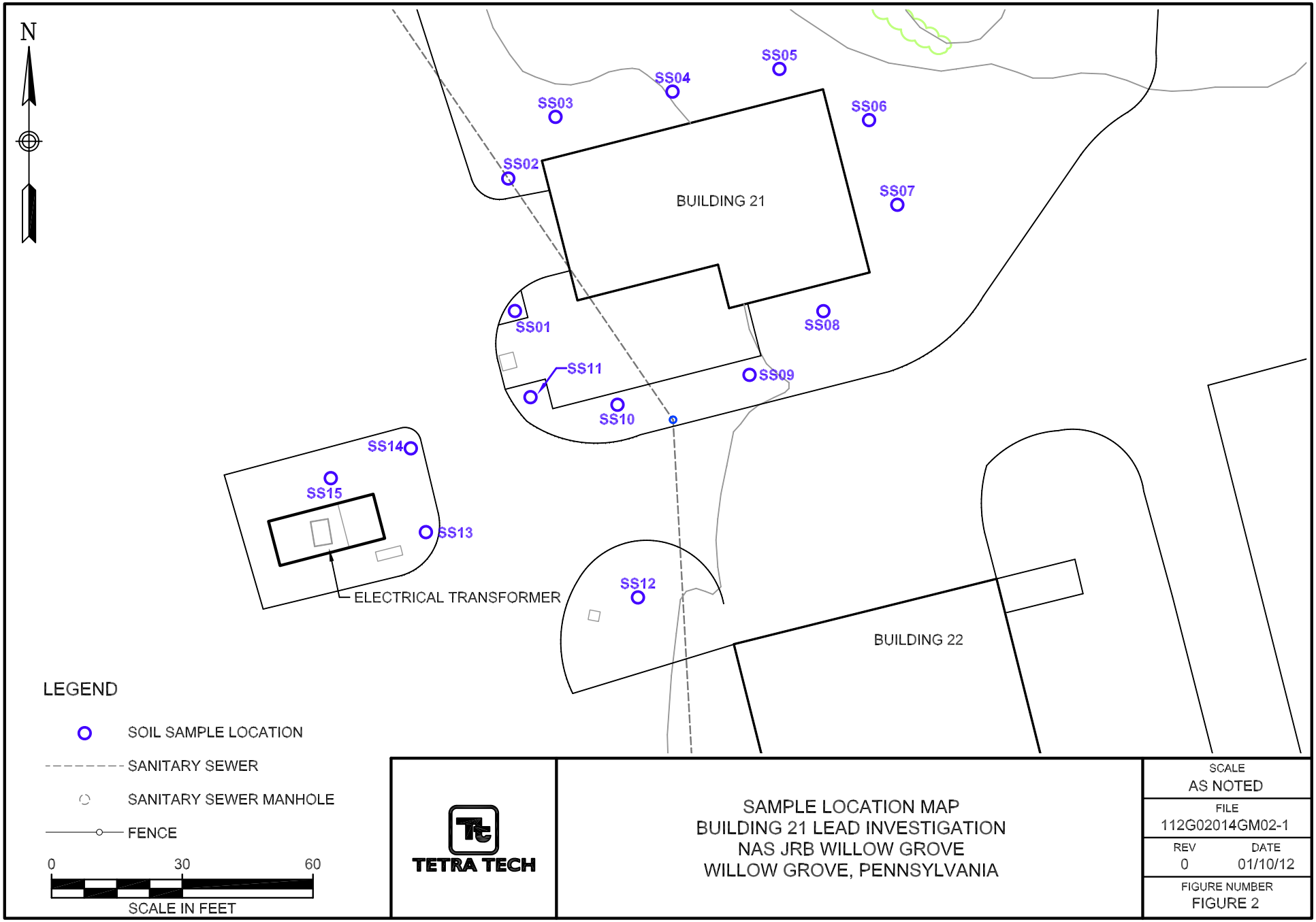
AERIAL BASE MAP PROVIDED BY THE PAMAP PROGRAM,
PA DEPARTMENT OF CONSERVATION AND NATURAL
RESOURCES, BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY

TETRA TECH

SITE LOCATION MAP
BUILDING 21
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

SCALE	AS NOTED
FILE	112G02014BM01
REV	0
DATE	01/10/12
FIGURE NUMBER	FIGURE 1

112G02014\1721\112G02014GM03-1.DWG 01/10/12 MKB

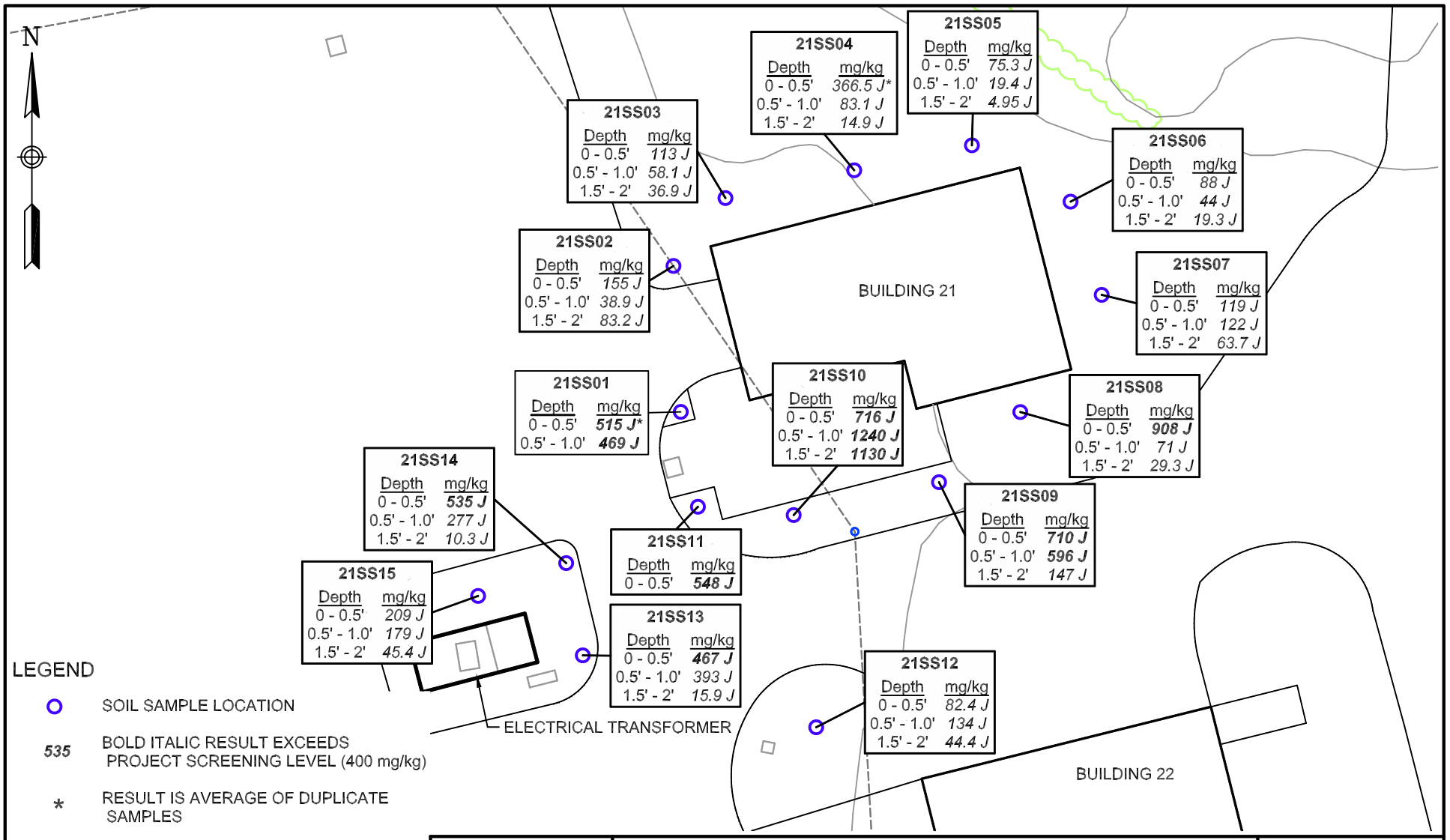


TETRA TECH

SAMPLE LOCATION MAP
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

SCALE	AS NOTED
FILE	112G02014GM02-1
REV	0
DATE	01/10/12
FIGURE NUMBER	FIGURE 2

112G02014\1721\112G02014GM03-3.DWG 01/10/12 MKB

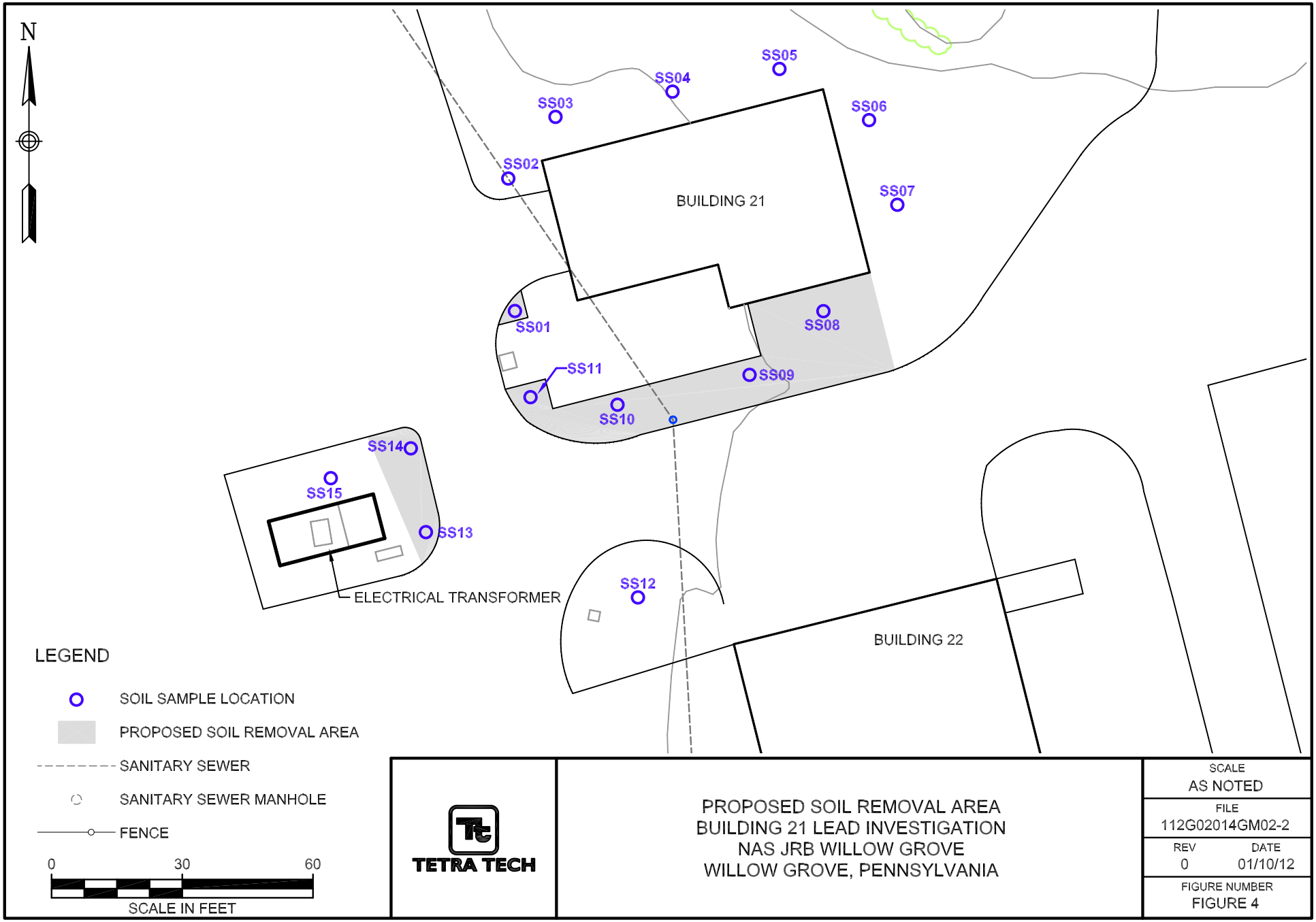


TETRA TECH

2011 SOIL LEAD RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

SCALE	AS NOTED
FILE	112G02014GM02-3
REV	0
DATE	01/10/12
FIGURE NUMBER	FIGURE 3

112G02014\1721\112G02014GM03-2.DWG 01/10/12 MKB



TETRA TECH

PROPOSED SOIL REMOVAL AREA
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE
WILLOW GROVE, PENNSYLVANIA

SCALE	AS NOTED
FILE	112G02014GM02-2
REV	0
DATE	01/10/12
FIGURE NUMBER	FIGURE 4

APPENDIX A

PREVIOUS INVESTIGATION RESULTS

P.N.S.Y. LABORATORY CODE 134.1 ENVIRONMENTAL ANALYSIS REQUEST FORM

ENVIRONMENTAL BRANCH

FAX 1-215-443-6935

CODE	NAME	PHONE / FAX #	SAMPLE MATRIX
C/20	R. Kimmel	443-6934	Solid

# OF SAMPLES	PRIORITY	SAMPLE SITE	SAMPLING METHOD	JOB ORDER
5	-	Willow Grove Air FB	Grab	

COPIES OF REPORT TO	ANALYSIS REQUESTED
R. Kimmel	T. Lead

SAMPLE #	SAMPLE SOURCE	SAMPLE DESCRIPTION	DATE/TIME
5	Willow Grove Air Force B.	Soil (LT.)	8-4-95

* SAMPLE WAS COLLECTED BY ? R. Kimmel

SPECIAL INSTRUCTIONS

WASTE WAS GENERATED BY ?

RELINQUISHED BY SIGN. / BADGE #	REC'D BY SIGN. /BADGE #	DATE/TIME
R. Kimmel		8-4-95 15:15
RELINQUISHED BY SIGN. / BADGE #	RES'D BY SIGN./BADGE #	DATE/TIME

DATE REC'D	LAB ANALYSIS #	DATE COMPLETED	TOTAL MANHOURS
8/4/95	OP0795-01605		

SIGNATURE OF SUPERVISOR Nicky Lawrence

* SEE ATTACHED SHEETS FOR RESULTS
* SAMPLE RETAINED/RETURNED TO SENDER FOR DISP.

LABORATORY ANALYSIS NO.	080795-01	080795-02	REQUIREMENTS MAXIMUM	METHOD NO.	ANALYST/S INT./DATE
SUBMITTERS SAMPLE NO.	—	—			
SAMPLE SOURCE	BLDG 21 S.W. SIDE	BLDG 21 STORM DRAIN			
				3115	JM 8/8/95
LEAD mm	(1) 1910.0	(1) 975.0		200.7	MDL 8-8-95

(1) RESULTS ON A DRY WEIGHT BASIS.

LABORATORY ANALYSIS NO.	080795-03	080795-04	REQUIREMENTS MAXIMUM	METHOD NO.	ANALYST/S INT./DATE
SUBMITTERS SAMPLE NO.	—	—			
SAMPLE SOURCE	BLDG 21 ELEC. SHOP	BLDG 21 ACROSS FRONT ROADWAY			
				3115	JM 8/8/95
LEAD IPM	(1) 170.0	(1) 186.0		200.7	MK 8-8-95

(1) RESULTS ON A DRY WEIGHT BASIS.

LABORATORY ANALYSIS NO.	080795-05		REQUIREMENTS MAXIMUM	METHOD NO.	ANALYST/S INT./DATE
SUBMITTERS SAMPLE NO.	—				
SAMPLE SOURCE	BLDG 21 000 cavity NORTH side				
				3115	Jm 8/8/95
LEAD PPM	2210.0 (1)			200.7	ML 8-8-95

(1) Results on a dry weight basis.

WAYNE ANALYTICAL & ENVIRONMENTAL SERVICES, INC.

992 Old Eagle School Rd.
Wayne, PA 19087

(610) 688-7485

TEST REPORT

Officer in Charge, NAVFAC Contracts
Public Works, Bldg. 78, Box 11
Naval Air Station, Joint Reserve Base
Willow Grove, Pa. 19090-5011

WAS : 20594
Sample received: 08/09/95
Report date : 08/11/95

Attn: Edna Hughes

Sub : 3 Grit samples from Building 21 for total Lead analysis.

WAS#	Sample ID	Method	MDL	Total Pb.conc
20594	Roof Top	7420	0.5	114.98
20595	Left of bldg	7420	0.5	597.00
20596	Behind bldg.	7420	0.5	594.00

All values are in mg/kg or ppm.
ND denotes non-detected or less than specified MDL.

Mohan K. Palat
08/16/95

WAYNE ANALYTICAL & ENVIRONMENTAL SERVICES, INC.

992 Old Eagle School Rd.
Wayne, PA 19087

(610) 688-7485

TEST REPORT

Officer in Charge, NAVFAC Contracts
Public Works, Bldg. 78, Box 11
Naval Air Station, Joint Reserve Base
Willow Grove, Pa. 19090-5011

WAS : 20594
Sample received: 08/09/95
Report date : 08/11/95

Attn: Edna Hughes
Sub : 1 of 3 Grit samples from Building 21 for TCLP metals analysis.

WAS 20594 Client I.D. Sample #1 from Roof Top

TCLP Metals Analysis

Parameter	EPA HW# EPA SW-846	Method	MDL	TCLP Limit	Conc.
Arsenic	D004	6010	.005	5.00	ND
Barium	D005	6010	1.00	100.00	ND
Cadmium	D006	6010	.050	1.00	ND
Chromium	D007	6010	.100	5.00	ND
Lead	D008	6010	.500	5.00	ND
Mercury	D009	7470	.0005	0.20	ND
Selenium	D010	6010	.005	1.00	ND
Silver	D011	6010	.100	5.00	ND

All values are in mg/kg or ppm.
ND denotes non-detected or less than specified MDL.

Mohan K. Palat
08/11/95

WAYNE ANALYTICAL & ENVIRONMENTAL SERVICES, INC.

992 Old Eagle School Rd.
Wayne, PA 19087

(610) 688-7485

TEST REPORT

Officer in Charge, NAVFAC Contracts
Public Works, Bldg. 78, Box 11
Naval Air Station, Joint Reserve Base
Willow Grove, Pa. 19090-5011

WAS : 20595
Sample received: 08/09/95
Report date : 08/11/95

Attn: Edna Hughes
Sub : 2 of 3 Grit samples from Building 21 for TCLP metals analysis.

WAS 20595 Sample #2 from Left side of the building.

TCLP Metals Analysis

Parameter	EPA HW# EPA SW -846	Method	MDL	TCLP Limit	Conc.
Arsenic	D004	6010	.005	5.00	ND
Barium	D005	6010	1.00	100.00	ND
Cadmium	D006	6010	.050	1.00	ND
Chromium	D007	6010	.100	5.00	ND
Lead	D008	6010	.500	5.00	ND
Mercury	D009	7470	.0005	0.20	ND
Selenium	D010	6010	.005	1.00	ND
Silver	D011	6010	.100	5.00	ND

All values are in mg/kg or ppm.
ND denotes non-detected or less than specified MDL.

Mohan K. Palat
08/11/95

WAYNE ANALYTICAL & ENVIRONMENTAL SERVICES, INC.

992 Old Eagle School Rd.
Wayne, PA 19087

(610) 688-7485

TEST REPORT

Officer in Charge, NAVFAC Contracts
Public Works, Bldg. 78, Box 11
Naval Air Station, Joint Reserve Base
Willow Grove, Pa. 19090-5011

WAS : 20596
Sample received: 08/09/95
Report date : 08/11/95

Attn: Edna Hughes
Sub : 3 of 3 Grit samples from Building 21 for TCLP metals analysis.

WAS 20596 Sample #3 from Left back side of the building.

TCLP Metals Analysis

Parameter	EPA HW# EPA SW-846	Method	MDL	TCLP Limit	Conc.
Arsenic	D004	6010	.005	5.00	ND
Barium	D005	6010	1.00	100.00	ND
Cadmium	D006	6010	.050	1.00	ND
Chromium	D007	6010	.100	5.00	ND
Lead	D008	6010	.500	5.00	ND
Mercury	D009	7470	.0005	0.20	ND
Selenium	D010	6010	.005	1.00	ND
Silver	D011	6010	.100	5.00	ND

All values are in mg/kg or ppm.
ND denotes non-detected or less than specified MDL.

Mohan K. Palat
08/11/95

DEPARTMENT OF THE NAVY

MEMORANDUM

DATE: 8/9/95

FROM: Maria L. Corona, Contracts Division (PW)

TO: Jim Edmond

SUBJ: DISTRIBUTION

ENCL: (1) DD Form 1155 - N62472-95-M-7477

1. Enclosure (1) is attached for your files.

ORDER FOR SUPPLIES OR SERVICES

(Contractor must submit four copies of invoice.)

Form Approved OMB No. 0704-0187 | PAGE 1 OF

PLEASE DO NOT RETURN YOUR FORM TO EITHER OF THESE ADDRESSES.
SEND YOUR COMPLETED FORM TO THE PROCUREMENT OFFICIAL IDENTIFIED IN ITEM 6.

1. CONTRACT / PURCH ORDER NO.	2. DELIVERY ORDER NO.	3. DATE OF ORDER (YYMMDD)	4. REQUISITION / PURCH REQUEST NO.	5. PRIORITY
N62472-95-M-7477		95 Aug 08	N0015895RCC7498	

6. ISSUED BY CODE N62472
Officer in Charge, NAVFAC Contracts
Public Works, Bldg. 78, Box 11
Naval Air Station, Joint Reserve Base
Willow Grove, PA 19090-5011

7. ADMINISTERED BY *(If other than 6)* CODE

8. DELIVERY FOB
[X] DEST
[ ] OTHER
(See Schedule if other)

9. CONTRACTOR CODE FACILITY CODE
NAME AND ADDRESS
WAYNE ANALYTICAL & ENV. SERVICES
992 Old Eagel School Road, Ste. 915
Wayne, PA 19087
Attn: V. K. Palat - (610) 688-7485
FAX - (610) 692-4226

10. DELIVER TO FOB POINT BY *(Date)* (YYMMDD): 95 Aug 15

11. MARK IF BUSINESS IS
[ ] SMALL
[X] SMALL DISAD-VANTAGED
[ ] WOMEN-OWNED

12. DISCOUNT TERMS: Net 30 days

13. MAIL INVOICES TO: Address Blk. 6 for Certificatior

14. SHIP TO CODE
Address Block 6

15. PAYMENT WILL BE MADE BY CODE
Defense Finance & Accounting Service
Defense Accounting Office-Cleveland Center
4400 Dauphine St., Code ITBA
New Orleans, LA 70146-5300

MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER

16. TYPE OF ORDER
DELIVERY [ ] This delivery order is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.
PURCHASE [X] Reference your Telequote dtd 08/08/95 furnish the following on terms specified herein.
ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

NAME OF CONTRACTOR | SIGNATURE | TYPED NAME AND TITLE | DATE SIGNED (YYMMDD)

[ ] If this box is marked, supplier must sign Acceptance and return the following number of copies:

17. ACCOUNTING AND APPROPRIATION DATA

ITEM NO.	APPROPRIATION SYMBOL AND SUBHEAD	OBJECT CLASS.	BUREAU CONT. NO.	SUB-ALLOT.	AUTH'N ACCT'G ACT'Y	TRANS. TYPE	PROPERTY ACC'T ACT'Y	COUN-TRY	COST CODE	AMOUNT
AA	1751806.72A0	000	00158	0	068518	2D	CC7498	US	00158540060Q	$825.00

18. ITEM NO.	19. SCHEDULE OF SUPPLIES / SERVICE	20. QUANTITY ORDERED / ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	N62472-95-M-7477, SITE TESTING, BLDG. 21 AT THE NAVAL AIR STATION, JOINT RESERVE BASE, WILLOW GROVE See attached scope Sections which apply to this Order for Supplies or Services are attached as follows: 1. Scope 2. Small Purchase FSC Clauses (Jun 1994)				$825.00

* *If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.*

24. UNITED STATES OF AMERICA
E. C. MILNER, LCDR, CEC, USN
BY: NAVFAC Contracts
CONTRACTING / ORDERING OFFICER

25. TOTAL $825.00
29. DIFFERENCES

26. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED
443-6263
Ray Thacker, Govt. Inspector
DATE | SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

27. SHIP. NO. [ ] PARTIAL [ ] FINAL

28. D.O. VOUCHER NO.

30. INITIALS

31. PAYMENT [ ] COMPLETE [ ] PARTIAL [ ] FINAL

32. PAID BY

33. AMOUNT VERIFIED CORRECT FOR

34. CHECK NUMBER

35. BILL OF LADING NO.

36. I certify this account is correct and proper for payment.
DATE | SIGNATURE AND TITLE OF CERTIFYING OFFICER

37. RECEIVED AT	38. RECEIVED BY (Print)	39. DATE RECEIVED (YYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NUMBER	42. S/R VOUCHER NO

Rec'd 8/4/95 1145

AUG-04-1995 10:46 FROM QAO PNSY TO 994436935 P.02

P.N.S.Y. LABORATORY CODE 134.1 ENVIRONMENTAL ANALYSIS REQUEST FORM

ENVIRONMENTAL BRANCH

FAX. 443-6936 6935 Phone # 443-6934

CODE	NAME	PHONE / FAX #	SAMPLE MATRIX
920	R.E. Kimmel	443-2104 6939	Soil

# OF SAMPLES	PRIORITY	SAMPLE SITE	SAMPLING METHOD	JOB ORDER
1		Bldg 21	Scoop	

COPIES OF REPORT TO	ANALYSIS REQUESTED
Willow Grove	Lead + Chromium

SAMPLE #	SAMPLE SOURCE	SAMPLE DESCRIPTION	DATE/TIME
072695-01	Willow Grove NAS	Grit	7/26/95 9:55
	Bldg 21 Roof	White + Brown	

* SAMPLE WAS COLLECTED BY ? R Kimmel

SPECIAL INSTRUCTIONS

WASTE WAS GENERATED BY ? [illegible]

Note: Additional analysis for total silica will be added to this sheet when completed VK

RELINQUISHED BY SIGN. / BADGE #	REC'D BY SIGN. / BADGE #	DATE/TIME
Richard C. Kimmel	[illegible] 65250	7-25-95 10:55
RELINQUISHED BY SIGN. / BADGE #	REC'D BY SIGN. / BADGE #	DATE/TIME

DATE REC'D	LAB ANALYSIS #	DATE COMPLETED	TOTAL MANHOURS
7/26/95	072695-01 072695-02	8/4/95	

SIGNATURE OF SUPERVISOR	
V. Lawrence 8/4/95	* SEE ATTACHED SHEETS FOR RESULTS * SAMPLE RETAINED/RETURNED TO SENDER FOR DISP.

LABORATORY ANALYSIS NO.	07295-02		REQUIREMENTS MAX.(PPM)	METHOD NO.	ANALYST/S INT./DATE
SUBMITTERS SAMPLE NO.	——				
SAMPLE SOURCE	W.G. NPS Bldg 21 Roof				
Lead PPM	54.0			200.7	AL 8-4-95
Chromium PPM	< 20.0				

WAYNE ANALYTICAL & ENVIRONMENTAL SERVICES, INC. (215) 688-7485

CLIENT

Sample

TEL:1-610-688-7485 Jun 22 95 8:21 No.001 P.01

W.O. No.: | Project Name: WNAFS

Sampler: R. Kimmel

Number	Date	Time	COMP	GRAB	Sample Location
1	6/21	13[00]			Bldg 21 Grab 1
					Sand Tanker From window
					spill For lead

FP | pH | SULFIDE | CYANIDE | MOIST | SOLIDS | TCLP EX | ZHE EX | 8 METALS | 13 METALS | PHENOLS | TOC | TOX | TPH 418 | TPH DRO | TPH GRO | BTEX

Sample Relinquished	Date	Time	Sample Received by:	Date	Time	Reason
Robert D. Kimmel	6-22-95	0930		6/22/95	9[a]	

Samples taken 6/21/95 outside Bldg 21

6

WAYNE ANALYTICAL & ENVIRONMENTAL SERVICES, INC.

992 Old Eagle School Rd.
Wayne, PA 19087

(610) 688-7485

TEST REPORT

Officer in Charge, NAVFAC Contracts
Public Works, Bldg.78, Box 11
Naval Air Station, Joint Reserve Base
Willow Grove, PA 19090-5011

WAS# : 20479
Sample Received:06/22/95
Analysis Date :06/23/95
Report Date :06/23/95

Attn: Edna Hughes
Sub: 1 Sand sample from Bldg. 21 Collected by R. Kimmel on 6/21/95 for total lead.

Parameter	EPA HW# EPA SW-846	Method	MDL	Conc.
Lead	D008	7420	0.50	2102

* All values are in mg/Kg. or ppm
ND denotes non-detected or less than specified MDL.

Mohan R. Palat
06/23/95

RECEIVED
OFFICER IN CHARGE
NAVFAC CONTRACTS
WILLOW GROVE, PA
1995 JUN 23 PM 12:52

DEPARTMENT OF THE NAVY
NATIONAL NAVAL MEDICAL CENTER
BETHESDA, MARYLAND 20889-5600

IN REPLY REFER TO

6260.1F
Ser 0630C/ 0246
APR 11 1995

From: Commander, National Naval Medical Center, Bethesda, MD
To: Commanding Officer, Naval Air Station, Willow Grove, PA

Subj: INDUSTRIAL HYGIENE WIPE SAMPLING RESULTS

Ref: (a) OPNAVINST 5100.23D

Encl: (1) Industrial Hygiene Wipe Sampling Results

1. Industrial Hygiene wipe sampling was performed at Naval Air Station, Willow Grove, PA (NASWG). Sampling was performed by the cognizant Industrial Hygienist as requested by the NASWG Safety Office. Samples were then forwarded to OIC NAVENPVNTMEDU TWO, Norfolk, VA for analysis in accordance with reference (a).

2. Sampling was performed for suspected metals in dust present at the abrasive blasting unit in building 21 and the mobile firing range. Samples indicate high lead levels. See enclosure (1) for specific results.

3. If there are any questions, please contact Steven Hart at DSN 443-6115/8 or commercial (215) 897-6115/8.

J. MASER
By direction

Copy to:
NAS Willow Grove PA - (Code 05)
NNMCNORDIV Philadelphia PA - Occupational Health (Code 0630A)

OPNAVINST 5100.23

To: DEPARTMENT OF THE NAVY
NAVY ENVIRONMENTAL AND PREVENTIVE
MEDICINE UNIT NO. 2
1887 POWHATAN ST.
NORFOLK, VA 23511-3394

From: NAVPHC PHILA
USNAVAL Base Bldg 133
PHILA. PA 19112-5205
ATTN: I-H DIV
POC: Steven Hart Phone: 215 897-6115

INDUSTRIAL HYGIENE BULK/WIPE SAMPLING FORM

Date: 03/27/95

Survey #: 95-[redacted] Activity: NASWG UIC: 00158

Building: 21 Location: Old Paint Storage Shop: Survival Equip. Storage

Sample Class: ☑ Bulk 2/24/95 ☑ Wipe (100 cm²)

Associated Air Samples: N/A

Collection Media: Cotton Wipe

Field ID	001	002	003		
Source	Blasting Booth Dust / Calandar Board	Blasting Booth / Sewing Table	Blank		
Sample #	1050	1051	1052		
Laboratory #	15170	71	72	NA	NA
Suspected Stressor	Metals ~~Pb~~ screen ~~Cd~~	→	→		
Analysis					
Results/Units	See	Attached			

Date Received: 08 MAR 1995 Date Reported:

Analytical Method Used: Limit of Detection:

Analysis Performed By: QA LINDSAY LAB. DIR BY direction Date:

IHT/WPM: Michael J. Brescia Date: 27 Feb 95 *IH: Steven C. Hart Date: 2/24/95

*BY MY SIGNATURE, I VERIFY THAT I HAVE REVIEWED THIS FORM FOR COMPLETENESS AND ACCURACY AND THAT THE WORK DOCUMENTED HEREON WAS CONDUCTED AND RECORDED IN ACCORDANCE WITH NAVY INSTRUCTIONS, FEDERAL REGULATIONS, AND/OR ACCEPTED INDUSTRIAL HYGIENE PROCEDURES.

NEHC 5100/16 (REV 7/92)

Reviewed for Laboratory 3/29/95
Jeffrey McClaflin, Lab. Mgr.

OFFICER IN CHARGE
NAVENPVNTMEDU TWO
CIHL CODE 07
1887 POWHATAN STREET
NORFOLK, VA 23511-3394

COMMERCIAL: (804)444-7671
DSN: 564-7671
ANALYTICAL METHOD: HUD
LOD (ALL BULK SAMPLES): .01%

SAMPLE RESULTS FOR ICP SCAN
(ALL RESULTS IN MG/M3 AND BLANK RESULTS IN UG
UNLESS OTHERWISE INDICATED)

ALL RESULTS IN MICROGRAM/WIPE

ANALYTE	LOD (ug)	1LAB# V5170	2LAB# V5171	3LAB# V5172	4LAB#	5LAB#
MANGANESE	5	110	156	< 5		
LEAD	20	8,000	11,200	< 20		
ZINC	5	2,210	2,460	5.5		
CADMIUM	2	111	96	< 2		
IRON	50	11,100	18,500	< 50		
COBALT	20	< 20	< 20	< 20		
COPPER	20	185	110	< 20		
BERYLLIUM	0.5	< .5	< .5	< .5		
ANTIMONY	100	< 100	< 100	< 100		
CHROMIUM	20	3,020	3,100	< 20		
MOLYBDENUM	5	20	17.2	< 5		
NICKEL	20	654	21	< 20		
STRONTIUM	0.5	1,270	512	< .5		
VANADIUM	5	6.95	6.5	< 5		

ANALYST: J. BEACHAM, CHEMIST DATE: 3-14-95 SIGNATURE: G.A. Lindsay

G.A. LINDSAY LAB DIR
BY direction

Reviewed for Laboratory
Jeffrey McClaflin, Lab. Mgr 3/27/95

APPENDIX B

REPORT OF SITE REMEDIATION OF BUILDING 21

REPORT OF SITE REMEDIATION PROJECT N62472-95-M-7377

BUILDING 21

LEAD REMOVAL/DECONTAMINATION

NAVAL AIR STATION, JOINT RESERVE BASE

WILLOW GROVE, PENNSYLVANIA

WRITTEN FOR:

OFFICER IN CHARGE, NAVFAC CONTRACTS
PUBLIC WORKS, BLDG. 78, BOX 11
NAVAL AIR STATION, JOINT RESERVE BASE
WILLOW GROVE, PA 19090-5011

ATTN: MR. RAY THACKER
GOVERNMENT INSPECTOR

SUBMITTED BY:

EAGLE INDUSTRIAL HYGIENE ASSOC., INC.
359 DRESHER ROAD
HORSHAM, PA. 19044

DECEMBER 1, 1995

Report #950943

INTRODUCTION:

Willow Grove Naval Air Station requested that Eagle Industrial Hygiene Associates, Inc., provide the services necessary to accomplish the removal, decontamination and proper disposal of lead dust and contaminated soil/ballast and equipment at Building 21 as detailed in Specifications for Contract N62472-95-M-7377. These areas included interior surfaces, the building exterior and the surrounding grounds. These services were provided at the facility between September 11 and November 15, 1995.

These services were authorized by E.C. Milner, LCDR, CEC, USN.

SCOPE:

The scope of services for this project included performing the following tasks as per written Specifications:

1. Phase One -- Building 21 Clean-up.
2. Phase Two -- Adjacent Building Clean-up.
3. Phase three -- Building Exterior and Grounds Clean-up.
4. Phase four -- Testing.

In addition, approximately 160 square feet of asbestos-containing "transite" paneling was removed from two locations within Building 21.

DESCRIPTION:

Initially, ten (10) wipe samples from the first floor, ten (10) wipe samples from the second floor , and five(5) wipe samples from the attached rear storage building were collected and analyzed for lead content prior to cleanup activities Sample results ranged between 655.2 ug/ft2 and 13101.12 ug/ft2 (reference Attachment 1 for pretest sample results).

Prior to any work procedures, each entrance/exit was posted with warning signs indicating that there is a lead hazard present.

Critical barriers were constructed of polyethylene sheeting as necessary to control the spread of lead contamination outside the work area during clean-up operations. In addition, a three stage decontamination chamber with shower was erected for the decontamination of equipment, salvageable materials and personnel. All personnel working within the interior of the building during the decontamination process wore "Tyvek" protective coveralls, rubber gloves and boots (disposable) and High Efficiency Particulate Absolute (HEPA)-filtered half-face and full-face respirators. A TWA personal air sample for airborne lead dust was collected within the breathing zone of a selected abatement worker during active interior cleaning procedures in order to maintain proper levels of

respiratory protection. The sample result was below the detection limit for the analysis method used and the volume of air collected (reference Attachment 2 for personal air sample results).

The paint blast booth and accompanying stack, and the unused ventilation stack located on the south wall were disassembled using grinders and power ratchets to allow for thorough decontamination and cleaning. For the grinding work, hot work and confined space activities permits were procured, a fire watch posted and fire extinguishers positioned in reach of the fire watch. Decontamination procedures included HEPA-vacuuming and wet-wiping with water/trisodium phosphate detergent all surfaces as detailed in the written specifications. The equipment after decontamination was removed from the building and returned to the Naval Air Station for disposal.

All interior surfaces of Building 21 were vacuumed, with special attention concentrated on the horizontal surfaces. The HEPA filtered vacuum system employed for this task was the Model 522 Vecloader with bag-out chamber. After vacuuming procedures were implemented, all interior surfaces were wet-wiped with trisodium phosphate and water.

All stone ballast was removed from the roof(s) using the Vecloader and disposed of as lead contaminated material. In addition, all exterior surfaces of Building 21 were also vacuumed using the Vecloader HEPA filtered unit.

The grounds and the vegetation surrounding the building were vacuumed using the 522 Vecloader in accordance with the sketch provided in the written specifications. The Vecloader was provided with a custom, surface/soil vacuuming head, consisting of a wheeled mower assembly connected to the Vecloader by a 5 inch flex duct operating at a negative pressure of 15 inches of water static pressure drop.

After all cleaning procedures were accomplished, post-test clearance surface wipe and air sampling was performed within the interior of Building 21, and post-test surface wipe and soil sampling was performed outside (no required clearance criteria).

Wipe samples for lead collected exterior of the building exhibited results ranging between "less than the detection limit" to 1300 ug/ft2 (reference Attachment 3 for exterior wipe sample results). Soil samples for lead collected exterior of the building exhibited results ranging between 50 mg/kg to 3200 mg/kg (reference Attachment 4 for exterior soil-sample results).

Wipe samples for lead collected in the interior of the building exhibited results for the first five samples analyzed ranging between 144 ug/ft2 to 35,100 ug/ft2 (reference Attachment 5 for interior wipe sample results). These results did not meet the specified clearance criteria of 200 ug/ft2 or less. Air samples (2) for lead collected in the interior of the building exhibited results "less than the detection limit" for the volume of air sampled, allowing non-protected personnel free access (reference Attachment 6 for interior air sample results).

The failure to achieve clearance with the initial post-test interior wipe sampling required re-cleaning (wet-wiping and HEPA-vacuuming) procedures to be implemented. Five post-test wipe samples for lead were then collected in the interior of the building to ascertain whether the recleaning effort achieved any positive results. These wipe samples exhibited results ranging between 990 ug/ft2 to 260,000 ug/ft2 (reference Attachment 7 for interior re-test wipe sample results).

At this point, a test-case cleaning procedure was performed on a one square foot deck surface located on the first floor of the Main Building. This surface was hand-scrubbed with a stiff bristle brush and a strong solution of tri-sodium phosphate in water. This surface was HEPA-vacuumed dry and the cleaning process repeated three more times. The surface was then wipe sampled for lead content. After the first wipe sample was collected, a four inch square surface was measured within the center of the previously cleaned square foot of deck surface, and recleaned in the same fashion five more times. This surface was then wipe sampled for lead content. These wipe samples exhibited results of 610 ug/ft2 and 820 ug/ft2, respectively (reference Attachment 8 for interior test-case wipe sample results).

As a result of not being able to achieve the specified interior wipe sample clearance criteria after such labor-intensive cleaning procedures, responsible project officials of the Willow Grove Naval Air Station informed Eagle Industrial Hygiene Associates, Inc., that the interior surface clearance requirement for lead was withdrawn from the written specification.

Asbestos-containing "transite" panels were removed at the end of the clean-up project by nondestructively disassembling them from their frames, wrapping the panels in 6-mil polyethylene sheeting, and properly labeling the wrapped panels prior to transport and proper disposal. A post-test air sample for asbestos was collected at the end of this removal project, exhibiting results of 0.005 f/cc, passing the USEPA's recommended clearance for airborne asbestos fibers of 0.01 f/cc or less (reference Attachment 9 for interior asbestos air sample results).

All waste materials generated by the removal/decontamination procedures were stored, transported and disposed of in accordance with all Federal, State and local regulations using Type H, open top 55 gallon drums.

Aqueous wastes from decontamination from general activities were properly drummed, labeled and retained on site for disposal to a proper TSD facility unless the local POTW permit allows disposal by permit regulations. All disposable clothing or equipment that was not decontaminated was contained and retained onsite for proper disposal.

RECOMMENDATIONS:

1) The failure to achieve wipe sample clearance criteria within Building 21 after extensive cleaning operations indicates that lead contamination is probably subsurface in nature, requiring an effective method of encapsulation to seal the interior surfaces.

2) All interior wood surfaces, (window frames, etc.) cannot be effectively encapsulated and should be demolished and replaced.

3) The liquid/sludge inside the "pit" area should be TCLP analyzed for any leachable constituent and properly disposed of. The pit area can then be cleaned and filled in.

4) There is evidence of more asbestos-containing materials within Building 21, including deck surfacing material and paint. The Building should be adequately bulk-sampled for the presence of asbestos-containing materials, then abated as necessary.

END

APPENDIX C

SAMPLE LOGS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215501-000.5
Sample Location: 5501
Sampled By:
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11 / Time: 1020 / Method: S.S. trowel / Monitor Reading (ppm):	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
	0-6"	Dark Brown	silty SAND, some F Gravel, Moist

COMPOSITE SAMPLE DATA:

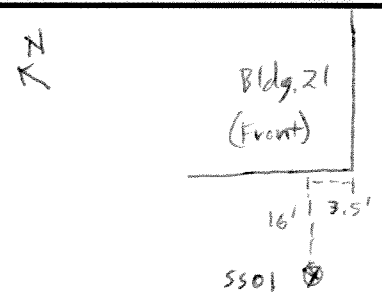
Date: / Method: / Monitor Readings (Range in ppm):	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	2	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.: 21DUP03 (0900)

Signature(s): David Nichols

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS01-0.5'1
Sample Location: SS01
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1030	0.5'-1'	BROWN	SILTY SAND and Gravel moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

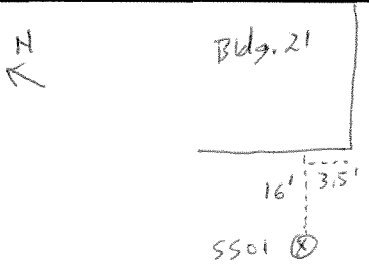
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215502-000.5
Sample Location: 215502
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10/18/11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1136	0-6"	Brown-gray	silty SAND and Gravel Moist
Method: S.S. Trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			NA	

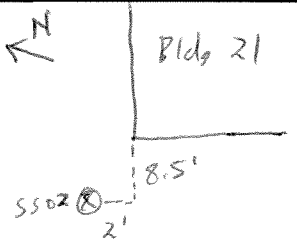
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

Ground surface was sparsely vegetated crushed stone.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Dan Klaber

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215502-0.501
Sample Location: 215502
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10/18/11	Depth	Color	Description (Sand, Silty, Clay, Moisture, etc.)
Time: 1153	0.5'-1'	Lt. Brown	Silty SAND, moist
Method: S.S. trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

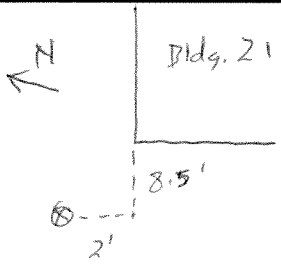
Date:	Time	Depth	Color	Description (Sand, Silty, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			NA	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS02-1.5D2
Sample Location:
Sampled By:
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1225	1.5'	Brown	Silty Sand, moist some fine gravel
Method: hand auger			
Monitor Reading (ppm): -			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

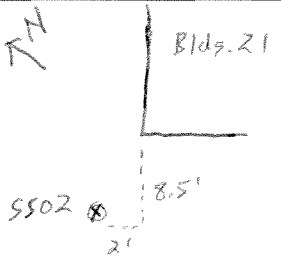
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

refusal at 1.5'
Sample collected at 1.5'

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Daniel Nichols

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS03-000.5
Sample Location: SS03
Sampled By: PW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1240	0-6"	Dark Brown	Silty Sand, moist some fine gravel
Method: S.S. trowel			
Monitor Reading (ppm): –			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

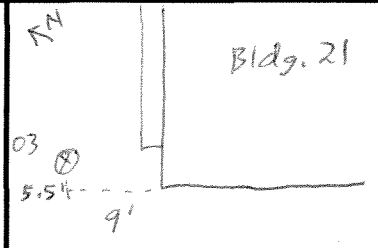
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

Ground surface was grass.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215503-0.501
Sample Location: 5503
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silty, Clay, Moisture, etc.)
Time: 1250	0.5'-1.0'	BROWN	SILTY SAND, some Fine Gravel; moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

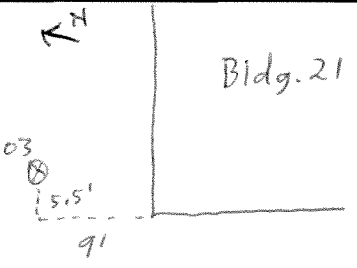
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar		

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald Mahler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 215503-1502
Sample Location:
Sampled By: DW/CF
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1305	1.5-2.0'	BRN to lt. BRN	SILTY SAND (F-C), some fine Gravel, moist
Method: hand auger			
Monitor Reading (ppm): -			

COMPOSITE SAMPLE DATA:

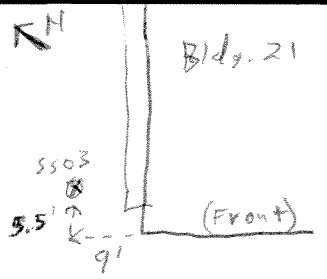
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Daled W Kuhn

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 215504-0005
Sample Location: 215504
Sampled By: RW/CF
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1330	0-6"	Dark Brn	silty SAND, some F Gravel moist
Method: S.S trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

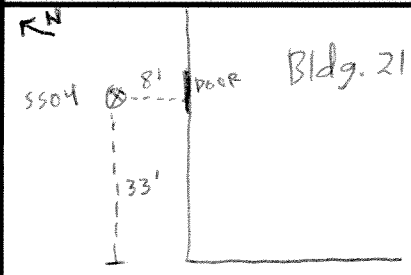
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

Ground surface consistsof grass.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.: 21DUP01 1000

Signature(s): Daled Nikolen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21 SS04 - 0.5 01
Sample Location: SS04
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1340	0.5 - 1'	Brown	Silty SAND (F-M), moist
Method: hand auger			Brick fragment
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA:

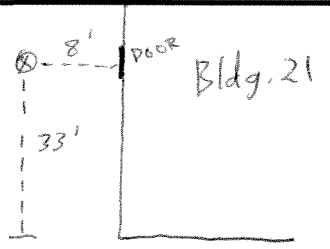
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS04-1.5-2
Sample Location: SS04
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1355	1.5'-2'	Brown	Silty SAND moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

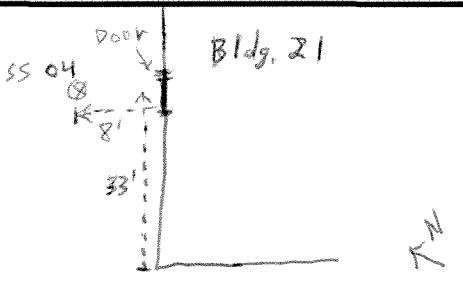
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

David Schulz

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215505-000,5
Sample Location: 5505
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1440	0-6"	Dark Brown	clayey SILT, some sand moist
Method: S.S trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

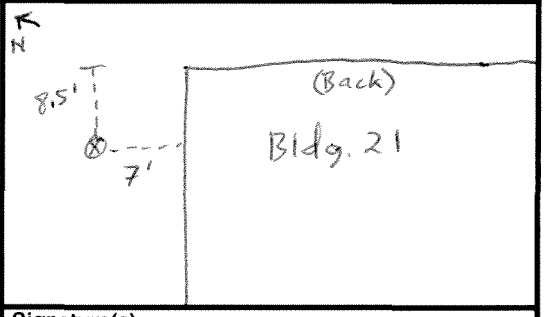
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓2	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215505-0.5(1)
Sample Location: SS05
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1450	0.5 - 1'	BROWN	Silty SAND, some F Gravel Moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

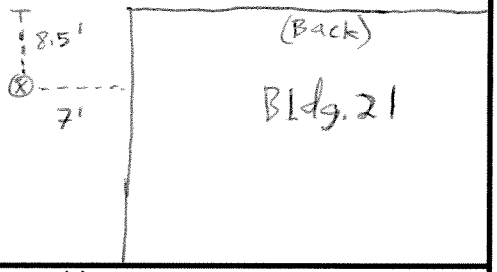
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Dwl Wheeler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS05-1.5-02
Sample Location: SS05
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1500	1.5'-2.0'	Light Brown	SILTY SAND (F-C) Moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

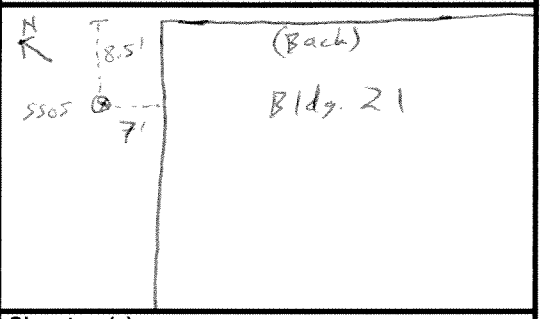
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald W. Hubbs

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215506-0001.5
Sample Location: 5506
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1515	0-6"	BROWN	Sandy SILT, tr. clay MOIST
Method: S.S. trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

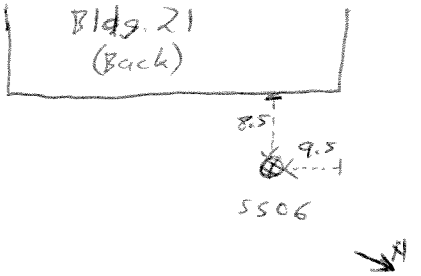
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

Ground surface was grass-covered

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Nichols

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215506-0.501
Sample Location: SS06
Sampled By: DW/FC
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1525	0.5'-1'	BROWN	Silty SAND, tr. clay
Method: hand auger			Moist
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

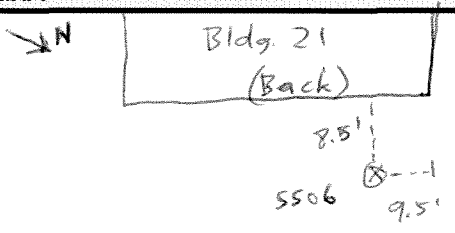
Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTEs:

Ground surface was grass covered.

~~refusal at 1.8'~~

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

David Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS06-1.5Q2
Sample Location: SS06
Sampled By: DW/CF
C.O.C. No.:

[] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1530	1.5'-1.8'	Brown	silty SAND
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

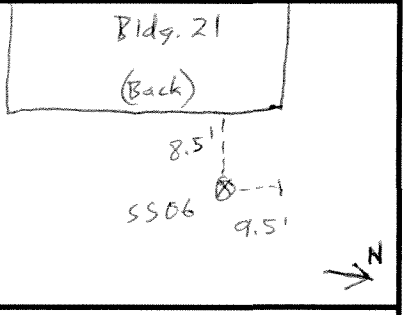
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

Refusal at 1.8'

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

David Wahler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215507-000.5
Sample Location: SS07
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1550	0-6"	BROWN	Silty SAND, moist
Method: S.S. trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

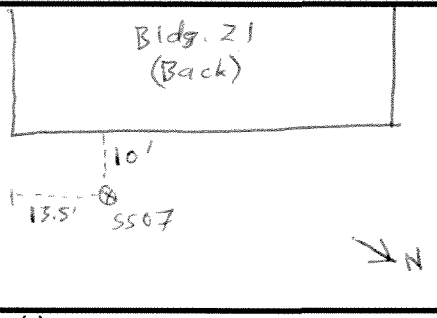
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

Ground surface was grass-covered.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.: 21 DUP 02 (0930)

Signature(s):

Donald Wheeler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS07-0.5D1
Sample Location: SS07
Sampled By: DW/FC
C.O.C. No.:

[] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1600	0.5'-1'	BROWN	Sandy SILT, moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

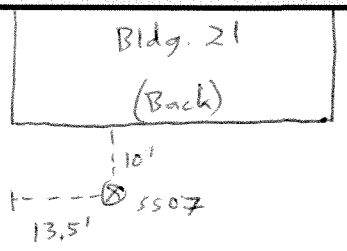
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

David White

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS07-1.5'
Sample Location: SS07
Sampled By: DW/FC
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1610	1.5'-2.0'	Brown	sandy SILT, moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

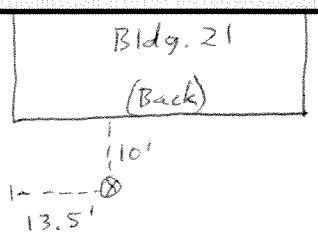
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):			N/A	

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

David Whaley

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215508-0005
Sample Location: SS08
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1115	0 - 6"	BROWN	silty SAND moist
Method: S.S. trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

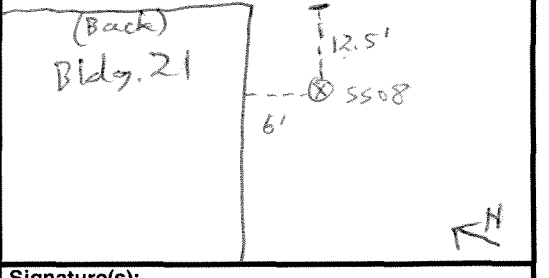
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Wheeler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215508-0.5 (1)
Sample Location: SS08
Sampled By: DW / CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1120	0.5'-1'	Brown	clayey SILT moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

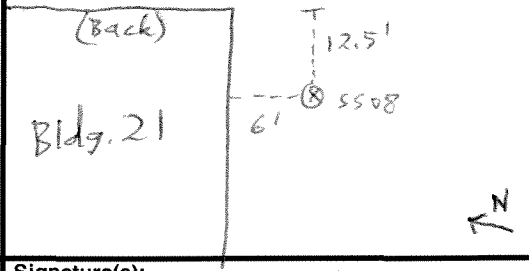
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar		

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): sealed w/ labels

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS08-1.5'-2'
Sample Location: SS08
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1130	1.5'-2'	light yellow brown	silty sand and Gravel tr. clay (F-C) moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

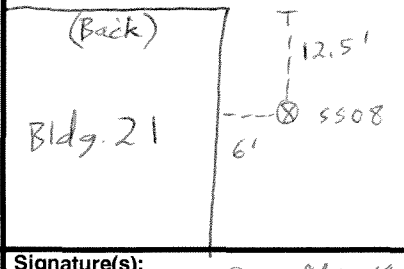
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Donald Wheeler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 215509-0005
Sample Location: 5509
Sampled By: DVLCF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1145	0-6"	BROWN	Sandy SILT tr. clay w/ plant roots moist
Method: S.S. trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

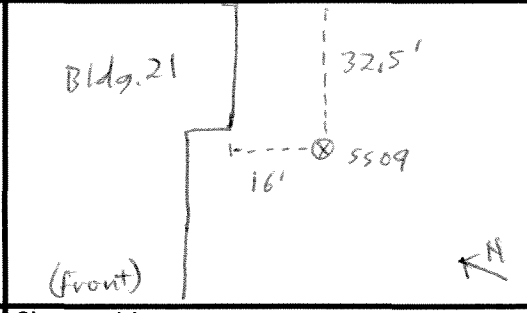
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	2 ✓	

OBSERVATIONS / NOTES:

Ground surface was grass-covered

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

David Calaba

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

[] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Sample ID No.: 21SS09-0.5
Sample Location: SS09
Sampled By:
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1150	0.5'-1'	Dark Brown	Silty SAND, some F Gravel moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

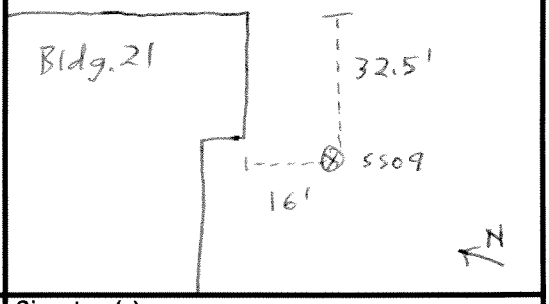
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald W Kaben

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS09-1.5-2
Sample Location: SS09
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1200	1.5'-2'	Brown	sandy SILT, tr. clay, moist some F Gravel
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

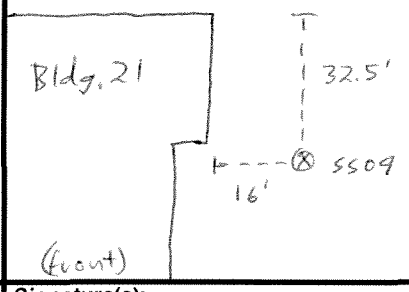
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Daniel Wilhelm

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21551O-0001
Sample Location: SS1O
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1230	0-6"	Dark Brown	silty SAND tr. clay some gravel moist plant roots
Method: S.S. from GI			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

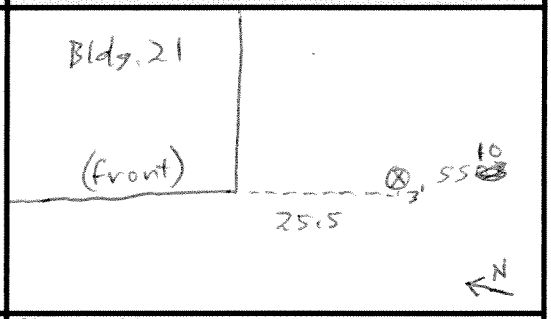
SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

Ground surface was grass covered

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Daniel Mahar

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS10-0.5D1
Sample Location: SS1D
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1235	0.5'-1'	Brown	silty SAND some F gravel moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

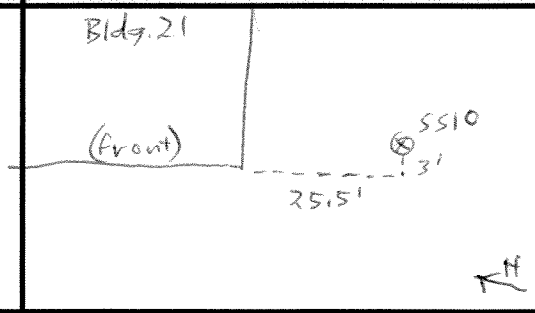
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS10-1.5 02
Sample Location: SS10
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1245	1.5'-2.0'	Brown	Silty SAND fr. to fine clay, moist Fill
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

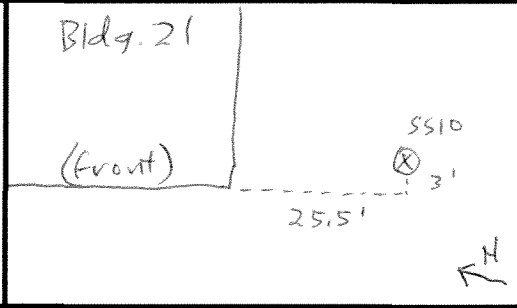
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS11-000.5
Sample Location: SS11
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1630	0-6"	Dk. Brown	silty SAND, some plant roots moist
Method: S.S. trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

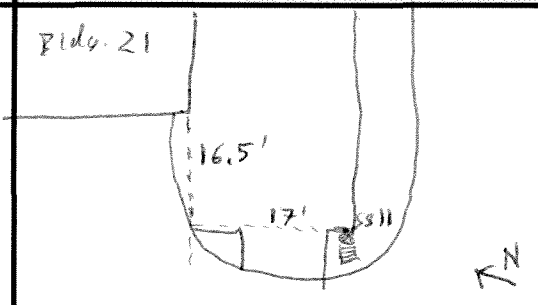
Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

ground surface was covered with weeds and grass

sample collected at storm sewer grating

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Darrell Wheeler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS12-000.5
Sample Location: SS12
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1445	0-6"	Brown	clayey SILT, moist
Method: S.S. Trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

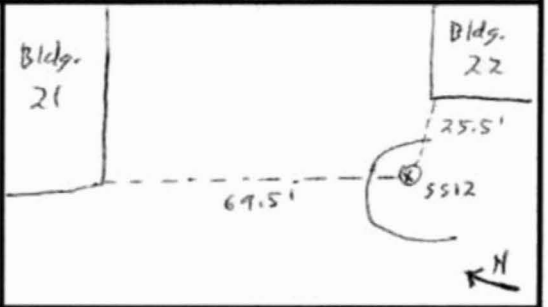
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	2	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Donald W Laber

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS12-0.5-1
Sample Location: SS12
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1450	0.5'-1'	Brown	clayey SILT, some SAND, moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

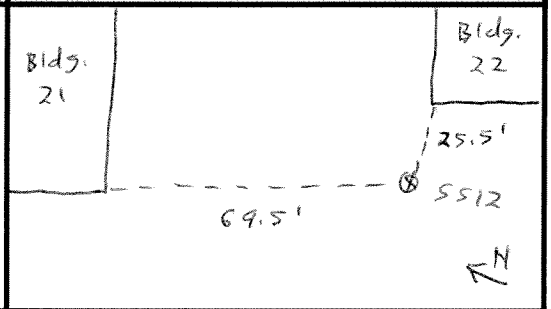
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar		

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald Wheeler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS12-1.5O2
Sample Location: SS12
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1500	1.5'-2'	Brown	clayey SILT, some SAND, moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

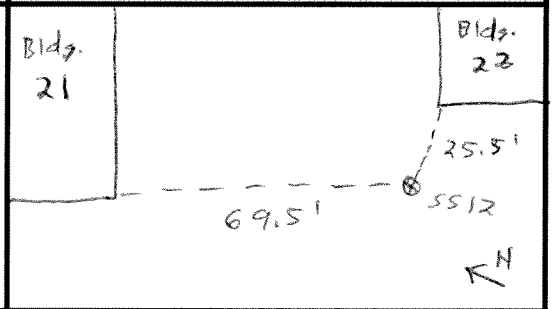
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21 5513 - 000.5
Sample Location: 5513
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1640	0 - 6"	Dark Brown	sandy SILT / silty SAND, some plant roots, moist
Method: S.S. trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

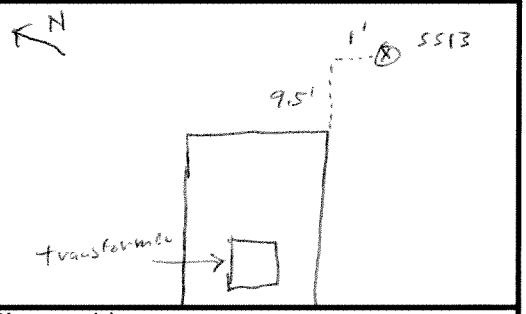
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald Wheeler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS13-0.5-01
Sample Location: SS13
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1645	0.5'-1'	Black	silty SAND, some F Gravel, moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

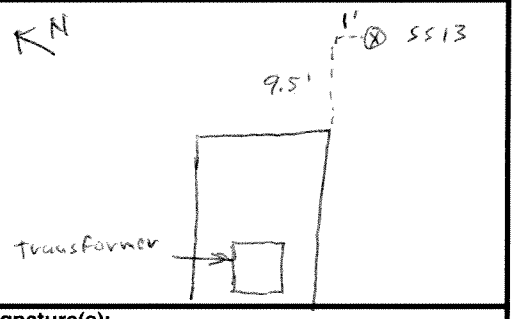
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald Wheeler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS13-1.5O2
Sample Location: SS13
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-18-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1710	1.5'-2'	Light Gray-Brown	Sandy SILT to clayey SILT, some GRAVEL, moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

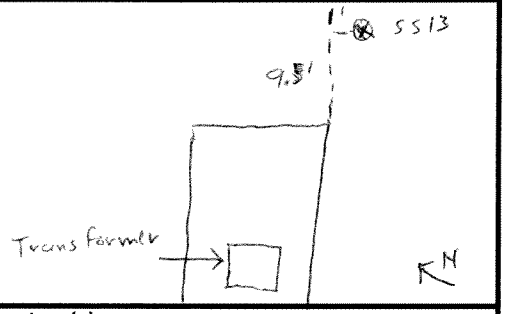
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS14-0005
Sample Location: SS14
Sampled By: DWCF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1325	0-6"	Dark Brown	silty SAND, some F gravel, plant roots moist
Method: S.S. trowel			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

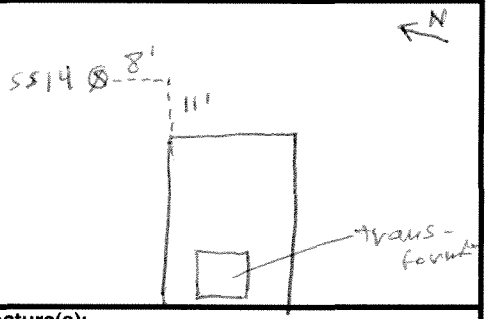
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

David Wheeler

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS14-0.5-01
Sample Location: SS14
Sampled By:
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1335	0.5'-1'	Dk Brown/ Black	Silty SAND and GRAVEL moist.
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

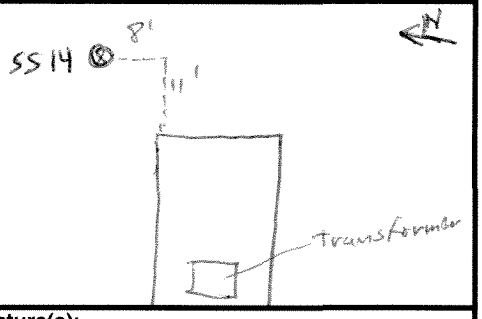
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar		

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Page___ of ___

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21514-1.502
Sample Location: SS14
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date:	Time:	Method:	Monitor Reading (ppm):	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
10-19-11	1350	hand auger		1.5'-2'	light Brn-Gray	clayey SILT, moist

COMPOSITE SAMPLE DATA:

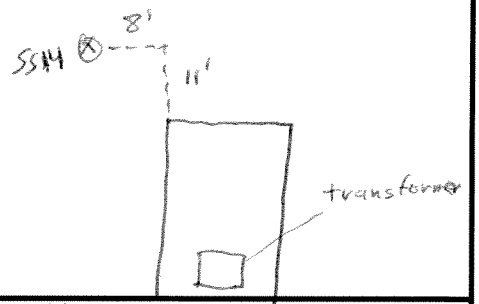
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald Nichols

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS15-000.5
Sample Location: SS15
Sampled By:
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11 / Time: 1415 / Method: S.S. trowel / Monitor Reading (ppm):	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
	0 - 6"	BROWN	clayey SILT, moist some plant roots

COMPOSITE SAMPLE DATA:

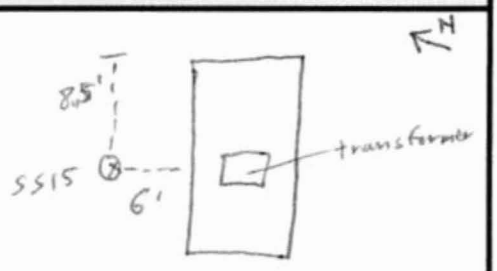
Date: / Method: / Monitor Readings (Range in ppm):	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD

Duplicate ID No.: 21DUP04 (0915)

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS15-0.5'01
Sample Location: SS15
Sampled By:
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1425	0.5-1'	BROWN	clayey SILT, moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

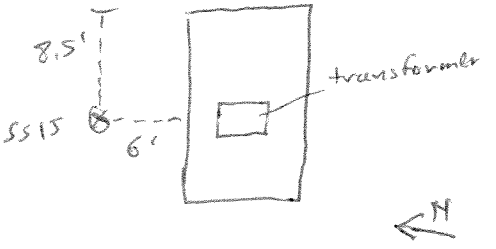
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald Whalen

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: Building 21 Lead Investigation
Project No.: 112G02014

Sample ID No.: 21SS15-1.5-02
Sample Location: SS15
Sampled By: DW/CF
C.O.C. No.:

[X] Surface Soil
[] Subsurface Soil
[] Sediment
[] Other:
[] QA Sample Type:

Type of Sample:
[X] Low Concentration
[] High Concentration

GRAB SAMPLE DATA:

Date: 10-19-11	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Time: 1430	1.5'-2'	Light Gray-BRN	clayey SILT, moist
Method: hand auger			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA:

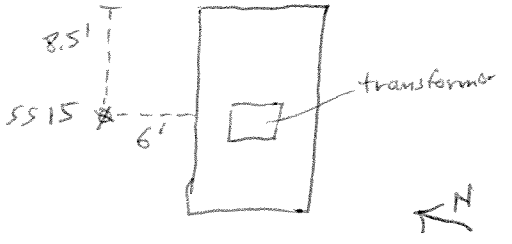
Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
Lead	1 x 8 oz. jar	✓	

OBSERVATIONS / NOTES:

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Donald Wheeler

APPENDIX D

DATA VALIDATION REPORT

TETRA TECH NUS

PHIL-24580

TO: **ANDY FREBOWITZ** **DATE: DECEMBER 12, 2011**

FROM: **MEGAN N. RITCHIE** **COPIES:** **FILE**

SUBJECT: **INORGANIC DATA VALIDATION – LEAD**
NAS JRB WILLOW GROVE BUILDING 21, WILLOW GROVE, PENNSYLVANIA
SDG NOs. C4288, C4289, and C4290

SAMPLES:

SDG C4288	**21/Solid/**		
21SS02-000.5	21SS04-000.5	21SS06-000.5	21SS08-000.5
21SS02-0.501	21SS04-0.501	21SS06-0.501	21SS08-0.501
21SS02-1.502	21SS04-1.502	21SS06-1.502	21SS08-1.502
21SS03-000.5	21SS05-000.5	21SS07-000.5	
21SS03-0.501	21SS05-0.501	21SS07-0.501	
21SS03-1.502	21SS05-1.502	21SS07-1.502	

SDG C4289	**21/Solid/**		
21SS09-000.5	21SS11-000.5	21SS13-000.5	21SS15-000.5
21SS09-0.501	21SS11-0.501	21SS13-0.501	21SS15-0.501
21SS09-1.502	21SS11-1.502	21SS13-1.502	21SS15-1.502
21SS10-000.5	21SS12-000.5	21SS14-000.5	
21SS10-0.501	21SS12-0.501	21SS14-0.501	
21SS10-1.502	21SS12-1.502	21SS14-1.502	

SDG C4290	**6/Solid/**	
21SS01-000.5	21DUP01	21DUP03
21SS01-0.51.0	21DUP02	21DUP04

2/Aqueous/
21RB-101811
21RB-101911

OVERVIEW

The sample set for the NAS JRB Willow Grove Building 21 Investigation – Willow Grove, PA, SDGs C4288, C4289, and C4290 consists of 48 solid environmental samples (designated 21SS##-) and two aqueous field quality control (QC) rinsate blanks (designated 21RB-). Samples 21SS05-000.5, 21SS09-000.5, and 21SS0512-000.5 were designated for matrix spike/matrix spike duplicate (MS/MSD) analyses. Four field duplicate pairs (listed below) were included in this sample set. All samples were analyzed for lead.

Parent Sample	Field Duplicate
21SS04-000.5	21DUP01
21SS07-000.5	21DUP02
21SS01-000.5	21DUP03
21SS15-000.5	21DUP04

The samples were collected by Tetra Tech NUS on October 18 and 19, 2011 and analyzed by Chemtech of Mountainside, New Jersey.

EPA SW-846 Method 6010B was used to analyze for lead.

SUMMARY

All analytes were successfully analyzed in all samples. The findings offered in this report are based upon a general review of all available data including data completeness, holding times until analysis, calibration data, laboratory blank results, ICP interference check samples, matrix spike (MS) and matrix spike duplicate (MSD) results, laboratory duplicate results, laboratory control spike (LCS) results, ICP serial dilution results, detection limits, and analyte quantitation.

Areas of concern with respect to data quality are listed below as follows:

MINOR PROBLEMS

- The relative percent difference (RPD) for laboratory duplicate analyses of sample 21SS05-000.5 exceeded the QC criterion of 35%. The positive and non-detected results for samples in SDG C4288 were qualified as estimated (J/UJ).
- The serial dilution percent differences (%D) for all SDGs exceeded the QC criterion of 10%. The positive results for all samples in all SDGs were qualified as estimated (J).
- The field duplicate RPD exceeded the QC criterion of 50% for field duplicate pair 21SS04-000.5 and 21DUP01. The positive results for these samples were qualified as estimated (J).

Notes

Lead was detected in the laboratory calibration and laboratory preparation blanks. The data were not qualified because all data were detected at concentrations greater than the action level of 5X the blank concentration.

The MS recovery for SDG C4288 exceeded the laboratory QC limit of 120% but did not exceed the National Functional Guideline criterion of 125%. The laboratory performed a post-digestion spike in which the recovery grossly exceeded the criterion as over 700%. The data were not qualified based on the post-digestion spike because the pre-digestion spike was acceptable.

Field duplicate RPDs for sample pairs 21SS07-000.5/21DUP02, 21SS01-000.5/21DUP03, and 21SS15-000.5/21DUP04 were within the QC criterion.

Lead was not detected in the field QC blanks.

EXECUTIVE SUMMARY

Laboratory Performance: Lead was detected in the laboratory blanks. The laboratory duplicate RPD for SDG C4288 exceeded the QC criterion. The serial dilution %Ds exceeded the QC criterion for all SDGs.

Other Factors Affecting Data Quality: One field duplicate pair RPD exceeded the QC criterion.

The data for these analyses were reviewed with reference to the EPA "Functional Guidelines for Inorganic Data Review", as amended for use within EPA Region 3 (4/93).

The text of this report has been formatted to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the Functional Guidelines and the Work Plan (WP)."

Megan Ritchie

Megan N. Ritchie
Chemist

Russ Sloboda

Tetra Tech NUS, Inc.
Russ Sloboda
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

Qualified Analytical Results

PROJ_NO: 02014	NSAMPLE	215502-0.501			215502-000.5			215502-1.502			215503-0.501		
SDG: C4288	LAB_ID	C4288-02			C4288-01			C4288-03			C4288-05		
FRACTION: M	SAMP_DATE	10/18/2011			10/18/2011			10/18/2011			10/18/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	89.6			91.2			89.4			90.7		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		38.9	J	FI	155	J	FI	83.2	J	FI	58.1	J	FI

PROJ_NO: 02014	NSAMPLE	215503-000.5			215503-1.502			215504-0.501			215504-000.5		
SDG: C4288	LAB_ID	C4288-04			C4288-06			C4288-08			C4288-07		
FRACTION: M	SAMP_DATE	10/18/2011			10/18/2011			10/18/2011			10/18/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	93.0			88.8			81.8			91.4		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		113	J	FI	36.9	J	FI	83.1	J	FI	239	J	FGI

PROJ_NO: 02014	NSAMPLE	215504-1.502			215505-0.501			215505-000.5			215505-1.502		
SDG: C4288	LAB_ID	C4288-09			C4288-13			C4288-10			C4288-14		
FRACTION: M	SAMP_DATE	10/18/2011			10/18/2011			10/18/2011			10/18/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	89.1			87.0			79.3			88.8		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		14.9	J	FI	19.4	J	FI	75.3	J	FI	4.95	J	FI

PROJ_NO: 02014	NSAMPLE	215506-0.501			215506-000.5			215506-1.502			215507-0.501		
SDG: C4288	LAB_ID	C4288-16			C4288-15			C4288-17			C4288-19		
FRACTION: M	SAMP_DATE	10/18/2011			10/18/2011			10/18/2011			10/18/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	84.4			82.2			86.1			81.2		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		44	J	FI	88	J	FI	19.3	J	FI	122	J	FI

PROJ_NO: 02014	NSAMPLE	215507-000.5			215507-1.502			215508-0.501			215508-000.5		
SDG: C4288	LAB_ID	C4288-18			C4288-20			C4288-22			C4288-21		
FRACTION: M	SAMP_DATE	10/18/2011			10/18/2011			10/19/2011			10/19/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	81.0			85.5			79.3			79.6		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		119	J	FI	63.7	J	FI	71	J	FI	908	J	FI

PROJ_NO: 02014	NSAMPLE	215508-1.502			215509-0.501			215509-000.5			215509-1.502		
SDG: C4289	LAB_ID	C4289-01			C4289-05			C4289-02			C4289-06		
FRACTION: M	SAMP_DATE	10/19/2011			10/19/2011			10/19/2011			10/19/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	84.5			89.7			83.9			85.3		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		29.3	J	I	596	J	I	710	J	I	147	J	I

PROJ_NO: 02014	NSAMPLE	215510-0.501			215510-000.5			215510-1.502			215511-000.5		
SDG: C4289	LAB_ID	C4289-08			C4289-07			C4289-09			C4289-10		
FRACTION: M	SAMP_DATE	10/19/2011			10/19/2011			10/19/2011			10/18/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	90.3			83.8			87.5			74.2		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		1240	J	I	716	J	I	1130	J	I	548	J	I

PROJ_NO: 02014	NSAMPLE	215512-0.501			215512-000.5			215512-1.502			215513-0.501		
SDG: C4289	LAB_ID	C4289-14			C4289-11			C4289-15			C4289-17		
FRACTION: M	SAMP_DATE	10/19/2011			10/19/2011			10/19/2011			10/18/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	81.8			76.6			82.5			80.4		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		134	J	I	82.4	J	I	44.4	J	I	393	J	I

PROJ_NO: 02014	NSAMPLE	215513-000.5			215513-1.502			215514-0.501			215514-000.5		
SDG: C4289	LAB_ID	C4289-16			C4289-18			C4289-20			C4289-19		
FRACTION: M	SAMP_DATE	10/18/2011			10/18/2011			10/19/2011			10/19/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	76.4			85.8			75.1			81.4		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		467	J	I	15.9	J	I	277	J	I	535	J	I

PROJ_NO: 02014	NSAMPLE	215514-1.502			215515-0.501			215515-000.5			215515-1.502		
SDG: C4289	LAB_ID	C4289-21			C4289-23			C4289-22			C4289-24		
FRACTION: M	SAMP_DATE	10/19/2011			10/19/2011			10/19/2011			10/19/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	81.0			82.2			78.7			79.8		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		10.3	J	I	179	J	I	209	J	I	45.4	J	I

PROJ_NO: 02014	NSAMPLE	215501-0.501			215501-000.5			21DUP01			21DUP02		
SDG: C4290	LAB_ID	C4290-02			C4290-01			C4290-05			C4290-06		
FRACTION: M	SAMP_DATE	10/19/2011			10/19/2011			10/18/2011			10/18/2011		
MEDIA: SOIL	QC_TYPE	NM			NM			FD			FD		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	87.4			82.1			90.7			81.4		
	DUP_OF							21SS04-000.5			21SS07-000.5		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		469	J	I	515	J	I	494	J	GI	101	J	I

PROJ_NO: 02014	NSAMPLE	21DUP03			21DUP04		
SDG: C4290	LAB_ID	C4290-07			C4290-08		
FRACTION: M	SAMP_DATE	10/19/2011			10/19/2011		
MEDIA: SOIL	QC_TYPE	FD			FD		
	UNITS	MG/KG			MG/KG		
	PCT_SOLIDS	83.8			74.5		
	DUP_OF	21SS01-000.5			21SS15-000.5		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		383	J	I	176	J	I

PROJ_NO: 02014	NSAMPLE	21RB-101811			21RB-101911		
SDG: C4290	LAB_ID	C4290-03			C4290-04		
FRACTION: M	SAMP_DATE	10/18/2011			10/19/2011		
MEDIA: WATER	QC_TYPE	RB			RB		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	100.0			100.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		3	U		3	U	

Data Qualifier Key:

B	-	Positive result is considered to be an artifact of blank contamination and should not be considered present.
J	-	Value is considered estimated due to exceedance of technical quality control or because result is less than the Contract Required Quantitation Limit (CRQL).
L	-	Positive result is considered biased low due to exceedance of technical quality control criteria.
U	-	Value is a non-detected result as reported by the laboratory.
UL	-	Non-detected result is considered biased low due to exceedance of technical quality control criteria.

Qualifier Codes:

a = Lab Blank Contamination
b = Field Blank Contamination
c = Calibration (i.e., %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
d = MS/MSD Noncompliance
e = LSC/LSCD Noncompliance
f = Laboratory Duplicate Imprecision
g = Field Duplicate Imprecision
h = Holding Time Exceedance
i = ICP Serial Dilution Noncompliance
j = GFAA PDS – GFAA MSA's r<0.995 (correlation coefficient)
k = ICP Interference – include ICSAB %Rs
l = Instrument Calibration Range Exceedance
m = Sample Preservation
n = Internal Standard Noncompliance
o = Poor Instrument Performance (i.e. baseline drifting)
p = Uncertainty Near Detection Limit (<2 x IDL for inorganics and < CRQL for organics)
q = Other Problems (can encompass of number of issues)
r = Surrogates Recovery Noncompliance
s = Pesticide/PCB Resolution
t = % Breakdown Noncompliance for DDT and Endrin
u = Pesticide/PCB % Difference Between Columns for Positive Results
v = Non-linear Calibrations, Tuning r <0.995 (correlation coefficient)

APPENDIX B

Results as Reported by the Laboratory

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215502-000.5	SDG No.:	C4288
Lab Sample ID:	C4288-01	Matrix:	SOIL
Level (low/med):	low	% Solid:	91.2

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	155	N*	1	0.123	0.615	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Gray	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215502-0.501	SDG No.:	C4288
Lab Sample ID:	C4288-02	Matrix:	SOIL
Level (low/med):	low	% Solid:	89.6

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	38.9	N*	1	0.121	0.603	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215502-1.502	SDG No.:	C4288
Lab Sample ID:	C4288-03	Matrix:	SOIL
Level (low/med):	low	% Solid:	89.4

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	83.2	N*	1	0.134	0.671	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215503-000.5	SDG No.:	C4288
Lab Sample ID:	C4288-04	Matrix:	SOIL
Level (low/med):	low	% Solid:	93

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	113	N*	1	0.119	0.597	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Gray	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215503-0.501	SDG No.:	C4288
Lab Sample ID:	C4288-05	Matrix:	SOIL
Level (low/med):	low	% Solid:	90.7

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	58.1	N*	1	0.121	0.607	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215503-1.502	SDG No.:	C4288
Lab Sample ID:	C4288-06	Matrix:	SOIL
Level (low/med):	low	% Solid:	88.8

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	36.9	N*	1	0.091	0.457	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215504-000.5	SDG No.:	C4288
Lab Sample ID:	C4288-07	Matrix:	SOIL
Level (low/med):	low	% Solid:	91.4

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	239	N*	1	0.086	0.432	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215504-0.501	SDG No.:	C4288
Lab Sample ID:	C4288-08	Matrix:	SOIL
Level (low/med):	low	% Solid:	81.8

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	83.1	N*	1	0.112	0.56	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215504-1.502	SDG No.:	C4288
Lab Sample ID:	C4288-09	Matrix:	SOIL
Level (low/med):	low	% Solid:	89.1

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	14.9	N*	1	0.104	0.522	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215505-000.5	SDG No.:	C4288
Lab Sample ID:	C4288-10	Matrix:	SOIL
Level (low/med):	low	% Solid:	79.3

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	75.3	N*	1	0.151	0.757	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215505-0.501	SDG No.:	C4288
Lab Sample ID:	C4288-13	Matrix:	SOIL
Level (low/med):	low	% Solid:	87

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	19.4	N*	1	0.109	0.543	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215505-1.502	SDG No.:	C4288
Lab Sample ID:	C4288-14	Matrix:	SOIL
Level (low/med):	low	% Solid:	88.8

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	4.95	N*	1	0.102	0.508	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215506-000.5	SDG No.:	C4288
Lab Sample ID:	C4288-15	Matrix:	SOIL
Level (low/med):	low	% Solid:	82.2

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	88	N*	1	0.124	0.619	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215506-0.501	SDG No.:	C4288
Lab Sample ID:	C4288-16	Matrix:	SOIL
Level (low/med):	low	% Solid:	84.4

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	44	N*	1	0.117	0.583	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215506-1.502	SDG No.:	C4288
Lab Sample ID:	C4288-17	Matrix:	SOIL
Level (low/med):	low	% Solid:	86.1

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	19.3	N*	1	0.137	0.683	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215507-000.5	SDG No.:	C4288
Lab Sample ID:	C4288-18	Matrix:	SOIL
Level (low/med):	low	% Solid:	81

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	119	N*	1	0.147	0.733	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215507-0.501	SDG No.:	C4288
Lab Sample ID:	C4288-19	Matrix:	SOIL
Level (low/med):	low	% Solid:	81.2

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	122	N*	1	0.117	0.586	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215507-1.502	SDG No.:	C4288
Lab Sample ID:	C4288-20	Matrix:	SOIL
Level (low/med):	low	% Solid:	85.5

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	63.7	N*	1	0.118	0.59	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215508-000.5	SDG No.:	C4288
Lab Sample ID:	C4288-21	Matrix:	SOIL
Level (low/med):	low	% Solid:	79.6

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	908	N*	1	0.124	0.618	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215508-0.501	SDG No.:	C4288
Lab Sample ID:	C4288-22	Matrix:	SOIL
Level (low/med):	low	% Solid:	79.3

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	71	N*	1	0.138	0.688	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215508-1.502	SDG No.:	C4289
Lab Sample ID:	C4289-01	Matrix:	SOIL
Level (low/med):	low	% Solid:	84.5

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	29.3	*	1	0.109	0.546	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215509-000.5	SDG No.:	C4289
Lab Sample ID:	C4289-02	Matrix:	SOIL
Level (low/med):	low	% Solid:	83.9

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	710	*	1	0.143	0.715	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215509-0.501	SDG No.:	C4289
Lab Sample ID:	C4289-05	Matrix:	SOIL
Level (low/med):	low	% Solid:	89.7

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	596	*	1	0.104	0.519	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215509-1.502	SDG No.:	C4289
Lab Sample ID:	C4289-06	Matrix:	SOIL
Level (low/med):	low	% Solid:	85.3

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	147	*	1	0.108	0.541	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215510-000.5	SDG No.:	C4289
Lab Sample ID:	C4289-07	Matrix:	SOIL
Level (low/med):	low	% Solid:	83.8

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	716	*	1	0.114	0.568	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215510-0.501	SDG No.:	C4289
Lab Sample ID:	C4289-08	Matrix:	SOIL
Level (low/med):	low	% Solid:	90.3

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	1240	*	1	0.082	0.408	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215510-1.502	SDG No.:	C4289
Lab Sample ID:	C4289-09	Matrix:	SOIL
Level (low/med):	low	% Solid:	87.5

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	1130	*	1	0.12	0.602	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215511-000.5	SDG No.:	C4289
Lab Sample ID:	C4289-10	Matrix:	SOIL
Level (low/med):	low	% Solid:	74.2

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	548	*	1	0.162	0.809	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Gray	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215512-000.5	SDG No.:	C4289
Lab Sample ID:	C4289-11	Matrix:	SOIL
Level (low/med):	low	% Solid:	76.6

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	82.4	*	1	0.157	0.783	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215512-0.501	SDG No.:	C4289
Lab Sample ID:	C4289-14	Matrix:	SOIL
Level (low/med):	low	% Solid:	81.8

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	134	*	1	0.14	0.699	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

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Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215512-1.502	SDG No.:	C4289
Lab Sample ID:	C4289-15	Matrix:	SOIL
Level (low/med):	low	% Solid:	82.5

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	44.4	*	1	0.145	0.727	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215513-000.5	SDG No.:	C4289
Lab Sample ID:	C4289-16	Matrix:	SOIL
Level (low/med):	low	% Solid:	76.4

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	467	*	1	0.127	0.633	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Gray	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215513-0.501	SDG No.:	C4289
Lab Sample ID:	C4289-17	Matrix:	SOIL
Level (low/med):	low	% Solid:	80.4

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	393	*	1	0.142	0.711	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Gray	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215513-1.502	SDG No.:	C4289
Lab Sample ID:	C4289-18	Matrix:	SOIL
Level (low/med):	low	% Solid:	85.8

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	15.9	*	1	0.103	0.514	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215514-000.5	SDG No.:	C4289
Lab Sample ID:	C4289-19	Matrix:	SOIL
Level (low/med):	low	% Solid:	81.4

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	535	*	1	0.101	0.505	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Gray	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215514-0.501	SDG No.:	C4289
Lab Sample ID:	C4289-20	Matrix:	SOIL
Level (low/med):	low	% Solid:	75.1

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	277	*	1	0.135	0.677	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Gray	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215514-1.502	SDG No.:	C4289
Lab Sample ID:	C4289-21	Matrix:	SOIL
Level (low/med):	low	% Solid:	81

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	10.3	*	1	0.131	0.656	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215515-000.5	SDG No.:	C4289
Lab Sample ID:	C4289-22	Matrix:	SOIL
Level (low/med):	low	% Solid:	78.7

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	209	*	1	0.122	0.61	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215515-0.501	SDG No.:	C4289
Lab Sample ID:	C4289-23	Matrix:	SOIL
Level (low/med):	low	% Solid:	82.2

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	179	*	1	0.135	0.676	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215515-1.502	SDG No.:	C4289
Lab Sample ID:	C4289-24	Matrix:	SOIL
Level (low/med):	low	% Solid:	79.8

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	45.4	*	1	0.123	0.616	mg/Kg	10/24/11	10/27/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215501-000.5	SDG No.:	C4290
Lab Sample ID:	C4290-01	Matrix:	SOIL
Level (low/med):	low	% Solid:	82.1

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	515	N	1	0.146	0.731	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Gray	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	215501-0.501	SDG No.:	C4290
Lab Sample ID:	C4290-02	Matrix:	SOIL
Level (low/med):	low	% Solid:	87.4

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	469	N	1	0.098	0.49	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:					

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	21RB-101811	SDG No.:	C4290
Lab Sample ID:	C4290-03	Matrix:	WATER
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	3	U	1	2.6	6	ug/L	10/24/11	10/26/11	SW6010B

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	21RB-101911	SDG No.:	C4290
Lab Sample ID:	C4290-04	Matrix:	WATER
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	3	U	1	2.6	6	ug/L	10/24/11	10/26/11	SW6010B

Color Before:	Colorless	Clarity Before:	Clear	Texture:	
Color After:	Colorless	Clarity After:	Clear	Artifacts:	
Comments:	Metals Group3				

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	21DUP01	SDG No.:	C4290
Lab Sample ID:	C4290-05	Matrix:	SOIL
Level (low/med):	low	% Solid:	90.7

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	494	N	1	0.108	0.542	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	

Comments:

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/18/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	21DUP02	SDG No.:	C4290
Lab Sample ID:	C4290-06	Matrix:	SOIL
Level (low/med):	low	% Solid:	81.4

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	101	N	1	0.113	0.567	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:					

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	21DUP03	SDG No.:	C4290
Lab Sample ID:	C4290-07	Matrix:	SOIL
Level (low/med):	low	% Solid:	83.8

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	383	N	1	0.118	0.592	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:					

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

CHEMTECH 284 Sheffield Street, Mountainside NJ 07092 (908)-789-8900 Fax : 908 789 8922

Report of Analysis

Client:	Tetra Tech NUS, Inc.	Date Collected:	10/19/11
Project:	CTO WE05 NAS Willow Grove Bldg 21	Date Received:	10/21/11
Client Sample ID:	21DUP04	SDG No.:	C4290
Lab Sample ID:	C4290-08	Matrix:	SOIL
Level (low/med):	low	% Solid:	74.5

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.
7439-92-1	Lead	176	N	1	0.145	0.726	mg/Kg	10/24/11	10/26/11	SW6010B

Color Before:	Brown	Clarity Before:		Texture:	Medium
Color After:	Yellow	Clarity After:		Artifacts:	
Comments:					

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution

J = Estimated Value
B = Analyte Found in Associated Method Blank
N = Presumptive Evidence of a Compound
E = Value Exceeds Calibration Range
OR = Over Range

APPENDIX C

Support Documentation

CHEMTECH

B1110049

CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO. C4288
QUOTE NO.
COC Number 020160

CLIENT INFORMATION

REPORT TO BE SENT TO:
COMPANY: Tetra Tech NUS
ADDRESS: 234 Mall Blvd.
CITY: King of Prussia STATE: PA ZIP: 19406
ATTENTION: Andrew Frebowitz
PHONE: 610-382-1170 FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: Building 21
PROJECT NO.: 02014 LOCATION: Willow Grove
PROJECT MANAGER: Andy Frebowitz
e-mail:
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: _____ DAYS *
HARD COPY: _____ DAYS *
EDD: _____ DAYS *
PREAPPROVED TAT: ☐ YES ☐ NO
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ RESULTS ONLY ☐ USEPA CLP
☐ RESULTS + QC ☐ New York State ASP "B"
☐ New Jersey REDUCED ☐ New York State ASP "A"
☐ New Jersey CLP ☐ Other _____
☐ EDD FORMAT _____

ANALYSIS

Lead (8oz jar)

PRESERVATIVES

#	1	2	3	4	5	6	7	8	9
	X								

COMMENTS

← Specify Preservatives
A-HCl B-HNO_3
C-H_2SO_4 D-NaOH
E-ICE F-Other

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	COMMENTS
1.	21 5502 - 000.5	Soil		X	10/18/11	1136	1	
2.	21 5502 - 0.501			X		1153	1	
3.	21 5502 - 1.502			X		1225	1	
4.	21 5503 - 000.5			X		1240	1	
5.	21 5503 - 0.501			X		1250	1	
6.	21 5503 - 1.502			X		1305	1	
7.	21 5504 - 000.5			X		1330	1	
8.	21 5504 - 0.501			X		1340	1	
9.	21 5504 - 1.502			X		1355	1	
10. 11.12	21 5505 - 000.5	↓		X	↓	1440	2	Do MS/MSD

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1. Donald Mulvihill	10/20/11 1630	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2.		2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3. FedEx	10-21-11 925	3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant
MeOH extraction requires an additional 4 oz jar for percent solid.
Comments:

Cooler Temp. 6°C
Ice in Cooler?: ✓

Page 1 of 5

SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☒ OVERNIGHT
CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT

Shipment Complete: ☒ YES ☐ NO

CHEMTECH
CHAIN OF CUSTODY RECORD

B1110049

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO. C4288
QUOTE NO.
COC Number 020155

CLIENT INFORMATION (REPORT TO BE SENT TO:)

COMPANY: Tetra Tech NUS
ADDRESS: 234 Mall Blvd.
CITY: King of Prussia STATE: PA ZIP: 19406
ATTENTION: Andrew Frebowitz
PHONE: 610-382-1170 FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: Building 21
PROJECT NO.: 02014 LOCATION: Willow Grove
PROJECT MANAGER: A. Frebowitz
e-mail:
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: DAYS *
HARD COPY: DAYS *
EDD: DAYS *
PREAPPROVED TAT: ☐ YES ☐ NO
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ RESULTS ONLY ☐ USEPA CLP
☐ RESULTS + QC ☐ New York State ASP "B"
☐ New Jersey REDUCED ☐ New York State ASP "A"
☐ New Jersey CLP ☐ Other
☐ EDD FORMAT

ANALYSIS

Lead (8 oz Jar)

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	PRESERVATIVES 1	2	3	4	5	6	7	8	9	COMMENTS
1. 13.	215505-0.501	soil		X	10/18/11	1450	1	X									
2. 14.	215505-1.502	"		X	"	1500	1	X									
3. 15.	215506-000.5	"		X	"	1515	1	X									
4. 16.	215506-0.501	"		X	"	1525	1	X									
5. 17.	215506-1.502	"		X	"	1530	1	X									
6. 18.	215507-000.5	"		X	"	1550	1	X									
7. 19.	215507-0.501	"		X	"	1600	1	X									
8. 20.	215507-1.502	"		X	"	1610	1	X									
9. 21.	215508-000.5	"		X	10/19/11	1115	1	X									
10. 22.	215508-0.501	"		X	10/19/11	1120	1	X									

Specify Preservatives: A-HCl B-HNO_3 C-H_2SO_4 D-NaOH E-ICE F-Other

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1. David Whelan	10/20/11 1630	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2.		2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3. Fed Ex	10-21-11 925	3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant Cooler Temp. 6°C
MeOH extraction requires an additional 4/oz jar for percent solid.
Comments:
Ice in Cooler?: ✓

Page 2 of 5

SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☒ OVERNIGHT CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT
Shipment Complete: ☒ YES ☐ NO

CHEMTECH
CHAIN OF CUSTODY RECORD

B 111004 284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO. C4289
QUOTE NO.
COC Number 020156

CLIENT INFORMATION

REPORT TO BE SENT TO:
COMPANY: Tetra Tech NUS
ADDRESS: 234 Mall Blvd. Ste. 260
CITY: King of Prussia STATE: PA ZIP: 19406
ATTENTION: Andrew Frebowitz
PHONE: FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: Building 21
PROJECT NO.: 02014 LOCATION: Willow Grove
PROJECT MANAGER: A. Frebowitz
e-mail:
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: DAYS *
HARD COPY: DAYS *
EDD: DAYS *
PREAPPROVED TAT: ☐ YES ☐ NO
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ RESULTS ONLY ☐ USEPA CLP
☐ RESULTS + QC ☐ New York State ASP "B"
☐ New Jersey REDUCED ☐ New York State ASP "A"
☐ New Jersey CLP ☐ Other
☐ EDD FORMAT

ANALYSIS

Lead (8 oz jar)

PRESERVATIVES

E

COMMENTS

Specify Preservatives
A – HCl B – HNO_3
C – H_2SO_4 D – NaOH
E – ICE F – Other

CHEMTECH SAMPLE ID 10/22/11	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	1	2	3	4	5	6	7	8	9	COMMENTS
1.	215508-1.502	Soil		X	10/19/11	1130	1	X									
2. 3, 4.	215509-000.5			X		1145	2	X									Do MS/MSD
3. 5.	215509-0.501			X		1150	1	X									
4. 6.	215509-1.502			X		1200	1	X									
7.	215510-000.5			X		1230	1	X									
8.	215510-0.501			X		1235	1	X									
9.	215510-1.502			X		1245	1	X									
10.	215511-000.5			X	10/18/11	1630	1	X									
11, 12, 13	215512-000.5			X	10/19/11	1445	2	X									Do MS/MSD
14.	215512-0.501			X	10/19/11	1450	1	X									

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1. David Wheeler	10/20/11 1630	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2.		2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3. FedEx	10-21-11 925	3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant
MeOH extraction requires an additional 4 oz jar for percent solid.
Comments:

Cooler Temp. 6.2°C
Ice in Cooler?:

Page 3 of 5

SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☒ OVERNIGHT
CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT

Shipment Complete: ☒ YES ☐ NO

CHEMTECH

B1110049

CHAIN OF CUSTODY RECORD

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO. C4289
QUOTE NO.
COC Number 020157

CLIENT INFORMATION

REPORT TO BE SENT TO:
COMPANY: Tetra Tech NUS
ADDRESS: 234 Mall Blvd. Ste. 260
CITY: King of Prussia STATE: PA ZIP: 19406
ATTENTION: Andrew Frebowitz
PHONE: FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: Building 21
PROJECT NO.: 02014 LOCATION: Willow Grove
PROJECT MANAGER: A. Frebowitz
e-mail:
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: DAYS *
HARD COPY: DAYS *
EDD: DAYS *
PREAPPROVED TAT: ☐ YES ☐ NO
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ RESULTS ONLY ☐ USEPA CLP
☐ RESULTS + QC ☐ New York State ASP "B"
☐ New Jersey REDUCED ☐ New York State ASP "A"
☐ New Jersey CLP ☐ Other
☐ EDD FORMAT

ANALYSIS

Lead

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	PRESERVATIVES E	1	2	3	4	5	6	7	8	9	COMMENTS
KZ 10/24/11									1	2	3	4	5	6	7	8	9	— Specify Preservatives A-HCl B-HNO_3 C-H_2SO_4 D-NaOH E-ICE F-Other
1. 15.	21 SS12-1.502	Soil		X	10/19/11	1500	1	X										
2. 16.	21 SS13-000.5			X	10/18/11	1640	1	X										
3. 17.	21 SS13-0.501			X		1645	1	X										
4. 19.	21 SS13-1.502			X		1710	1	X										
5. 19.	21 SS14-000.5			X	10/19/11	1325	1	X										
6. 20.	21 SS14-0.501			X		1335	1	X										
7. 21.	21 SS14-1.502			X		1350	1	X										
8. 22.	21 SS15-000.5			X		1415	1	X										
9. 23.	21 SS15-0.501			X		1425	1	X										
10. 24.	21 SS15-1.502			X		1430	1	X										

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1. David Whelan	10/20/11 1630	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2.		2.
RELINQUISHED BY	DATE/TIME	RECEIVED FOR LAB BY
3. FedEx	10-21-11 925	3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant
MeOH extraction requires an additional 4 oz jar for percent solid.
Comments:

Cooler Temp. 6.0°C
Ice in Cooler?: ✓

Page 4 of 5

SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☒ OVERNIGHT
CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT

Shipment Complete: ☒ YES ☐ NO

Revision 8/2007

WHITE - CHEMTECH COPY FOR RETURN TO CLIENT YELLOW - CHEMTECH COPY PINK - SAMPLER COPY

CHEMTECH
CHAIN OF CUSTODY RECORD

B110049

284 Sheffield Street, Mountainside, NJ 07092
(908) 789-8900 Fax (908) 789-8922
www.chemtech.net

CHEMTECH PROJECT NO. C4290
QUOTE NO.
COC Number 020158

CLIENT INFORMATION

REPORT TO BE SENT TO:
COMPANY: Tetra Tech NUS
ADDRESS: 234 Mall Blvd.
CITY: King of Prussia STATE: PA ZIP:
ATTENTION: Andrew Frebowitz
PHONE: 610-382-1170 FAX:

CLIENT PROJECT INFORMATION

PROJECT NAME: Building 21
PROJECT NO.: 02014 LOCATION: Willow Grove
PROJECT MANAGER: A. Frebowitz
e-mail:
PHONE: FAX:

CLIENT BILLING INFORMATION

BILL TO: PO#:
ADDRESS:
CITY: STATE: ZIP:
ATTENTION: PHONE:

DATA TURNAROUND INFORMATION

FAX: _____ DAYS *
HARD COPY: _____ DAYS *
EDD: _____ DAYS *
PREAPPROVED TAT: ☐ YES ☐ NO
STANDARD TURNAROUND TIME IS 10 BUSINESS DAYS

DATA DELIVERABLE INFORMATION

☐ RESULTS ONLY ☐ USEPA CLP
☐ RESULTS + QC ☐ New York State ASP "B"
☐ New Jersey REDUCED ☐ New York State ASP "A"
☐ New Jersey CLP ☐ Other _____
☐ EDD FORMAT _____

ANALYSIS

Lead (8oz jar) / Lead (500ml poly)

CHEMTECH SAMPLE ID	PROJECT SAMPLE IDENTIFICATION	SAMPLE MATRIX	SAMPLE TYPE COMP	SAMPLE TYPE GRAB	SAMPLE COLLECTION DATE	SAMPLE COLLECTION TIME	# OF BOTTLES	PRESERVATIVES 1	2	3	4	5	6	7	8	9	COMMENTS
								E	B, E								← Specify Preservatives A-HCl B-HNO_3 C-H_2SO_4 D-NaOH E-ICE F-Other
1.	21 SS01-000.5	Soil		X	10/19/11	1020	1	X									
2.	21 SS01-0.501	Soil		X	10/19/11	1030	1	X									
3.	21 RB-101811	AQ		X	10/18/11	1315	1		X								Rinsate Blank
4.	21 RB-101911	AQ		X	10/19/11	1220	1		X								Rinsate Blank
5.	21 DUP01	Soil		X	10/18/11	1000	1	X									
6.	21 DUP02	Soil		X	10/18/11	0930	1	X									
7.	21 DUP 03	Soil		X	10/19/11	0900	1	X									
8.	21 DUP04	Soil		X	10/19/11	0915	1	X									
9.				X													
10.																	

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER	DATE/TIME	RECEIVED BY
1. Daniel Whalen	10/20/11 1630	1.
RELINQUISHED BY	DATE/TIME	RECEIVED BY
2.		2.
RELINQUISHED BY:	DATE/TIME:	RECEIVED FOR LAB BY:
3. FedEx	10/21/11 925	3.

Conditions of bottles or coolers at receipt: ☒ Compliant ☐ Non Compliant
MeOH extraction requires an additional 4 oz jar for percent solid.
Comments:

Cooler Temp. 6°C
Ice in Cooler?: ✓

Page 5 of 5

SHIPPED VIA: CLIENT: ☐ HAND DELIVERED ☒ OVERNIGHT
CHEMTECH: ☐ PICKED UP ☐ OVERNIGHT

Shipment Complete: ☒ YES ☐ NO

CHEMTECH

CASE NARRATIVE

Tetra Tech NUS, Inc.
Project Name: CTO WE05 NAS Willow Grove Bldg 21
Project # N/A
Chemtech Project # C4288
Test Name: Metals Group3

A. Number of Samples and Date of Receipt:
22 Solid samples were received on 10/21/2011.

B. Parameters:
According to the Chain of Custody document, the following analyses were requested: Metals Group3. This data package contains results for Metals Group3.

C. Analytical Techniques:
The analysis of Metals Group3 was based on method 6010B and digestion based on method 3050 (soils).

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Blank Spike met requirements for all samples.
The Duplicate analysis met criteria for all samples except for Lead.
The Matrix Spike analysis met criteria for all samples except for Lead.
The Matrix Spike Duplicate analysis met criteria for all samples.
The Blank analysis did not indicate the presence of lab contamination.
The Calibration met the requirements.
The Serial Dilution met criteria for all samples except for Lead.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature_____

CHEMTECH

CASE NARRATIVE

Tetra Tech NUS, Inc.
Project Name: CTO WE05 NAS Willow Grove Bldg 21
Project # N/A
Chemtech Project # C4289
Test Name: Metals Group3

A. Number of Samples and Date of Receipt:
24 Solid samples were received on 10/21/2011.

B. Parameters:
According to the Chain of Custody document, the following analyses were requested: Metals Group3. This data package contains results for Metals Group3.

C. Analytical Techniques:
The analysis of Metals Group3 was based on method 6010B and digestion based on method 3050 (soils).

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Blank Spike met requirements for all samples.
The Duplicate analysis met criteria for all samples except for Lead.
The Matrix Spike analysis met criteria for all samples.
The Matrix Spike Duplicate analysis met criteria for all samples.
The Blank analysis did not indicate the presence of lab contamination.
The Calibration met the requirements.
The Serial Dilution met criteria for all samples except for Lead.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature_____

CHEMTECH

CASE NARRATIVE

Tetra Tech NUS, Inc.
Project Name: CTO WE05 NAS Willow Grove Bldg 21
Project # N/A
Chemtech Project # C4290
Test Name: Metals Group3

A. Number of Samples and Date of Receipt:
6 Solid samples were received on 10/21/2011.
2 Water samples were received on 10/21/2011.

B. Parameters:
According to the Chain of Custody document, the following analyses were requested: Metals Group3. This data package contains results for Metals Group3.

C. Analytical Techniques:
The analysis of Metals Group3 was based on method 6010B and digestion based on method 3050 (soils) and 3010 (waters).

D. QA/ QC Samples:
The Holding Times were met for all analysis.
The Blank Spike met requirements for all samples.
The Duplicate analysis met criteria for all samples.
The Matrix Spike analysis met criteria for all samples.
The Matrix Spike Duplicate analysis met criteria for all samples except for Lead for Solid samples.
The Blank analysis did not indicate the presence of lab contamination.
The Calibration met the requirements.
The Serial Dilution met criteria for all samples except for Lead for Solid samples

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature_____

CHEMTECH

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc. **SDG No.:** C4288

Contract: TETR06 **Lab Code:** CHEM **Case No.:** C4288 **SAS No.:** C4288

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	MDL	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	14:46	LB57509
CCB01	Lead	5.5	+/-6.0	J	2.6	6.0	P	10/26/2011	15:02	LB57509
CCB02	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	15:39	LB57509
CCB03	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	16:21	LB57509
CCB04	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	16:53	LB57509
CCB05	Lead	2.9	+/-6.0	J	2.6	6.0	P	10/26/2011	17:25	LB57509
CCB06	Lead	3.2	+/-6.0	J	2.6	6.0	P	10/26/2011	18:06	LB57509
CCB07	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	18:38	LB57509
CCB08	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	19:10	LB57509
CCB09	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	19:41	LB57509
CCB10	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	20:13	LB57509
CCB11	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	20:45	LB57509
CCB12	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	21:17	LB57509
CCB13	Lead	2.7	+/-6.0	J	2.6	6.0	P	10/26/2011	22:21	LB57509
CCB14	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	22:53	LB57509
CCB15	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	23:25	LB57509
CCB16	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/26/2011	23:57	LB57509
CCB17	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/27/2011	00:28	LB57509
CCB18	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/27/2011	01:00	LB57509
CCB19	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/27/2011	01:32	LB57509
CCB20	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/27/2011	02:04	LB57509
CCB21	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/27/2011	02:37	LB57509
CCB22	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/27/2011	03:10	LB57509
CCB23	Lead	2.6	+/-6.0	U	2.6	6.0	P	10/27/2011	04:00	LB57509

CHEMTECH

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc. **SDG No.:** C4288

Instrument: P5

Sample ID	Analyte	Result (mg/Kg)	Acceptance Limit	Conc Qual	MDL mg/Kg	CRQL mg/Kg	M	Analysis Date	Analysis Time	Run
PB58766BL		SOIL		Batch Number:	PB58766			Prep Date:	10/24/2011	
	Lead	0.243	<0.600	J	0.120	0.600	P	10/26/2011	22:10	LB57509

CHEMTECH

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: Tetra Tech NUS, Inc. **SDG No.:** C4290

Instrument: P5

Sample ID	Analyte	Result (mg/Kg)	Acceptance Limit	Conc Qual	MDL mg/Kg	CRQL mg/Kg	M	Analysis Date	Analysis Time	Run
PB58762BL		**SOIL**		**Batch Number:**		**PB58762**		**Prep Date:**	**10/24/2011**	
	Lead	0.248	<0.600	J	0.120	0.600	P	10/26/2011	18:56	LB57509
PB58773BL		**WATER**		**Batch Number:**		**PB58773**		**Prep Date:**	**10/24/2011**	
	Lead	2.600	<6.000	U	2.600	6.000	P	10/26/2011	15:05	LB57509

CHEMTECH

Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech NUS, Inc. **Level:** LOW **SDG No.:** C4288

Contract: TETR06 **Lab Code:** CHEM **Case No.:** C4288 **SAS No.:** C4288

Matrix: SOIL **Sample ID:** C4288-10 **Client ID:** 215505-000.5D

Percent Solids for Sample: 79.3 **Duplicate ID** C4288-10D **Percent Solids for Spike Sample:** 79.3

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Lead	mg/Kg	20	75.3080		116.9406		43.3	*	P

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

CHEMTECH

Metals

- 6 -

DUPLICATE SAMPLE SUMMARY

Client: Tetra Tech NUS, Inc. **Level:** LOW **SDG No.:** C4289

Contract: TETR06 **Lab Code:** CHEM **Case No.:** C4289 **SAS No.:** C4289

Matrix: SOIL **Sample ID:** C4289-02 **Client ID:** 215509-000.5D

Percent Solids for Sample: 83.9 **Duplicate ID** C4289-02D **Percent Solids for Spike Sample:** 83.9

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Lead	mg/Kg	20	710.0112		924.7170		26.3	*	P

"A control limit of ±20% RPD for each matrix applies for sample values greater than 10 times Detection Limit"

CHEMTECH

Metals

-9 -

ICP SERIAL DILUTIONS

SAMPLE NO.
215512-000.5L

Lab Name: Chemtech Consulting Group **Contract:** TETR06

Lab Code: CHEM **Case No.:** C4289 **SAS No.:** C4289 **SDG No.:** C4289

Matrix (soil/water): WATER **Level (low/med):** LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Lead	631.52		715.85		13.4		P

CHEMTECH

Metals

-9 -

ICP SERIAL DILUTIONS

SAMPLE NO.
215509-000.5L

Lab Name: Chemtech Consulting Group **Contract:** TETR06

Lab Code: CHEM **Case No.:** C4289 **SAS No.:** C4289 **SDG No.:** C4289

Matrix (soil/water): WATER **Level (low/med):** LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Lead	5956.99		8033.32		34.9		P

CHEMTECH

Metals

-9 -

ICP SERIAL DILUTIONS

SAMPLE NO.
215505-000.5L

Lab Name: Chemtech Consulting Group **Contract:** TETR06

Lab Code: CHEM **Case No.:** C4288 **SAS No.:** C4288 **SDG No.:** C4288

Matrix (soil/water): WATER **Level (low/med):** LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Lead	597.19		777.70		30.2		P

CHEMTECH

Metals

-9 -

ICP SERIAL DILUTIONS

SAMPLE NO.
HRP-SB-15(0-0.5)L

Lab Name: Chemtech Consulting Group **Contract:** TETR06

Lab Code: CHEM **Case No.:** C4290 **SAS No.:** C4290 **SDG No.:** C4290

Matrix (soil/water): WATER **Level (low/med):** LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Lead	1511.75		2112.53		39.7		P

CHEMTECH

Metals
- 5a -
MATRIX SPIKE SUMMARY

Client: Tetra Tech NUS, Inc. **Level:** LOW **SDG No.:** C4288

Contract: TETR06 **Lab Code:** CHEM **Case No.:** C4288 **SAS No.:** C4288

Matrix: SOIL **Sample ID:** C4288-10 **Client ID:** 215505-000.5S

Percent Solids for Sample: 79.3 **Spiked ID:** C4288-11S **Percent Solids for Spike Sample:** 79.3

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Lead	mg/Kg	80 - 120	230.8782		75.3080		126.10	123.4	N	P

CHEMTECH

Metals
- 5b -
POST DIGEST SPIKE SUMMARY

Client: Tetra Tech NUS, Inc. **SDG No.:** C4288

Contract: TETR06 **Lab Code:** CHEM **Case No.:** C4288 **SAS No.:** C4288

Matrix: WATER **Level:** LOW **Client ID:** 215505-000.5A

Sample ID: C4288-10 **Spiked ID:** C4288-10A

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Lead	ug/L	80 - 120	1733.56		597.19		155.0	733.1		P

APPENDIX E

STATISTICAL EVALUATION OF RESULTS

STATISTICAL EVALUATION OF LEAD RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE

Version 2.0	Raw Statistics															
Run Date: 02/29/2012 03:47 PM	Frequency		Number	Number	Mininum	Maximum	Mininum	Maximum	Sample of	Mean of	Mean of		Standard		Coefficient	
Chemical	of Detection		of Unique	of	Non	Non	Detected	Detected	Maximum	All	Positive	Median	Deviation	Variance	of	Skewness
	Number	Percent	Results	Rejections	Detected	Detected			Detected	Samples	Detects				Variation	
Lead	46/46	100%	46	0	-	-	4.95 J	1240 J	21SS10-0.501	261	261	121	303	91720	1.16	1.64

STATISTICAL EVALUATION OF LEAD RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE

Version 2.0	Background Statistics				Discordance Outlier Test			Gamma Statistics								
Run Date: 02/29/2012 03:47 PM	95% Upper	95% Upper	95% Upper	95% Upper				k	k star	Theta	Theta	nu	nu	Approx	Adjusted	Adjusted
Chemical	Prediction	Tolerance	Percentile	Percentile	Test	Critical	Outlier?	Hat	bais	hat	Star	hat	star	Chi Square	Level of	Chi Square
	Limit	Limit		Non-Parametric	Statistic	Value			corrected					Value (0.05)	Significance	Value
Lead	1229	2058	1145	898	3.23	2.92	Yes	0.810	0.772	322	338	74.5	71.0	52.6	0.045	52.1

STATISTICAL EVALUATION OF LEAD RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE

Version 2.0	Lognormal Statistics					Normal Distribution Test				95% UCL	Gamma Distribution Test				
Run Date: 02/29/2012 03:47 PM	Mininum	Maximum	Mean of	Standard		Distribution	Test	Critical			A-D	A-D 5%	K-S	K-S 5%	
Chemical	Detected	Detected	Log	Deviation	Variance	Test	Statistic	Statistic	Distribution	Student's-t	Test	Critical	Test	Critical	Distribution
			Data								Statistic	Value	Statistic	Value	
Lead	1.60	7.12	4.83	1.34	1.81	Shapiro-Wilk	0.778	0.945	Not Normal	336	0.659	0.787	0.108	0.135	Gamma

STATISTICAL EVALUATION OF LEAD RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE

Version 2.0	95% UCLs		Lognormal Distribution Test				UCL Assuming Lognormal Distribution				
Run Date: 02/29/2012 03:47 PM	Approximate	Adjusted	Distribution	Test	Critical		H	H	95%	97.5%	99%
Chemical	Gamma	Gamma	Test	Statistic	Statistic	Distribution	Statistic	UCL	Chebyshev	Chebyshev	Chebyshev
	UCL	UCL							(MVUE) UCL	(MVUE) UCL	(MVUE) UCL
Lead	352	356	Shapiro-Wilk	0.969	0.945	Lognormal	2.73	535	628	770	1049

STATISTICAL EVALUATION OF LEAD RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE

Version 2.0	95% Non-parametric UCL											
Run Date: 02/29/2012 03:47 PM	Central				Standard		Hall's	Percentile	BCA	95%	97.5%	99%
Chemical	Limit	Adjusted-CLT	Modified-t	Jacknife	Bootstrap	Bootstrap-t	Bootstrap	Bootstrap	Bootstrap	Chebyshev	Chebyshev	Chebyshev
	Theorem						UCL	UCL	UCL	(Mean, Std)	(Mean, Std)	(Mean, Std)
Lead	334	346	338	336	334	349	352	338	340	456	540	705

STATISTICAL EVALUATION OF LEAD RESULTS
BUILDING 21 LEAD INVESTIGATION
NAS JRB WILLOW GROVE

Version 2.0		EPA's ProUCL		
Run Date: 02/29/2012 03:47 PM	Data	Recommended		Comments
Chemical	Distribution	UCL to Use		
Lead	Gamma	352	Approximate Gamma 95% UCL	- -